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FERRANTI

Number 634

Thursday, January 4, 1979

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Briefing

Robots 79 conference

INDUSTRIAL robots in the UK will be the main topic of a four-day conference called Robots 79, to be held at the University of Greenwich between March 27 and 30. Experts in robotics will participate in four specific sessions, dealing with applications, new equipment, research and development trends, and the social and economic aspects and governmental involvement in robots.

Above will be a large display of industrial robots, and the event organised by the British Robot Federation, Bedford.

CS lease

IBM expand their capacity in lease terms. Mid Computer Leasing Inc., of Edmond, New York, has also reported a loss for 1978 financial year, which ended on October 31, mainly because of a loss of nearly \$3,000 in the fourth quarter. In the 1978 financial year, the company, MCL, expects to report losses of nearly \$17 million compared with less than \$14 million in 1977, when the firm had a net profit of \$827,482.

COOPER

COMPONENT in principle has reached by Commodore International to acquire the full stock of Micro Display Inc of Dallas. The company is currently owned by two Israeli concerns, Diamal Sales Co and Steven Silikofsky.

Series date

TUESDAY, January 31 is the last date pencilled in by the BBC to supersede the low mid-range IBM 370 machines. The entry-level machine expected to be about four times as powerful as the 370/15 (11 times as previously) (CW, December 14), on Orlansky, analyst with PricewaterhouseCoopers of New York, believes that IBM may aim its primarily at users of lines from its competitors first 12 months of usage, rather than at its own base.

Final version

IBM System/34 is the latest line for which Cincom has implemented its database management system Total. Integrated in the US, the software is said to be a multi-tasking real version, a single copy of which can support multiple and online tasks simultaneously.

Adcomp denial

THE firm denial by Modem's finance manager, Alexander Giles, that either he or any was involved, Wall Street observers still say that the two companies seeking respectively a full takeover and an 80 per cent stake in the US-based minicomputer

P0 pay dispute threat to Prestel and System X

DISCONTENT over pay among operations and programming staff in the Post Office's data processing service is threatening the operation of computer centres handling Prestel, Giro and P0 billing and payroll applications, as well as the continuing development of the advanced electronic System X.

Plans for strike action later this month have already been laid by the staff's union, the Society of Civil and Public Servants. The dispute centres around a regarding claim that seeks to give them parity with white-collar engineers in the P0.

"The claim is for about £1,000 computer staff," said an SCPS spokesman, "and has been made because we have fallen behind in pay. Some engineers earn up to £1,000 more than equivalent computer or clerical staff. This is one of the major reasons that we now see a turnover rate of about 20 per cent for people in the data processing service."

This is not only the concern of the P0 data processing service, however, as the same problem has already been highlighted by SCPS deputy general secretary Campbell Christie, who is urging for higher pay and better conditions for all members. (C.W. November 16, 1978)

Against this background, however, a meeting of data processing staff was held in November at which the men voted by five to one to take

• Turn to page 10

United drops out of leasing

ONE of the best known third party computer lessors, United Leasing, is dropping out of the computer leasing business because of the rapid fall in the margin to be made on a CPU. In the future would be higher than now, even though its value might be lower.

United's decision is the latest development in an established saga on continuing the declining value of IBM CPUs which until now has centred primarily on plummeting residual values. Late in 1977 Computer Weekly exclusively reported that Lloyd's underwriters were no longer prepared to insure the residual values of machines on cheap long-term leases with break period terminations.

He said, "It has been estimated that CPU sales will account for no more than about 15 per cent of IBM's revenues by 1985. With CPUs costing no more than about \$100,000 by then it will not be worth negotiating them when the lease period terminates."

Asked to comment on whether he thought it would be worthwhile writing leases on CPUs in the future, Peter Doyle, president of the newly-formed European Computer Trading and Leasing Association (CW, November 28, 1978), said he expected that the percentage pro-

• Turn to page 10

WIN A PCY

A PC personal computer is waiting to be won in a competition organised by the consultancy firm Partnership of London for The Computer Department of the Year. It is intended to stimulate high standards in advertising design in computer products and services.

Advertorials that have appeared in the UK Press since April 1978 are eligible for entry. There will be three categories: hardware, software, and computer-related product services. The winner of each category will receive an illustrated trophy as shown in our picture by Michaela Hulse of Compton. The overall winner will receive the PC worth £1,000.

The PC will be an entry fee of £1.10 for each ad submitted. All entries will be judged by the BCS Specialist Group for the Disabled, a panel of experts who will be invited to judge the entries. The judges are being provided by Compton. Entry forms can be obtained from Michaela Hulse of Compton, Oak Lane on 01-295 4266.

Atom 'bomb' hits ICL shares

REPORTS that ICL could face problems over the use of American parts in 2000s on order for the Atomic Energy Authority have wiped much of the shine off the company's share price.

Despite ICL confidence that the problem, which arises from a new US Act designed to curb the spread of nuclear weapons technology, will prove trivial, the shares have plunged 20 pence since the news broke. Euphoria over the company's strong performance in 1977-78 - profits of £37 million on turnover of £509 million (CW, December 21, 1978) has largely evaporated.

At issue are the Intel chips which will be used in the two dual 2076s and one 2080 processor on order for the UK Atomic Energy Authority under a £13 million contract (CW, September 14, 1978).

The new US Act, passed in March, requires that all US ex-

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APPOINTMENTS: PAGES 13-18



COMPUTER WEEKLY'S INSIDE NEWS

1984 AND ALL THAT

THE New Year brings a new Computer Weekly column and a chance for readers to join in. In the spot previously filled by interrupt, there now appears 1984 And All That. With the booming mass media coverage of the so-called 'silicon chip revolution', there is increasing reference outside the technical press to aspects of information technology. The new column aims to monitor this information cloudburst, highlighting some of the strange and quirky ways in which our industry is viewed by the outside world.

WRITE ON

A lively debate on the role of marketing literature and the computer press leads a lively page of reader letters

page 4

AD FLASHES

Millions of travellers on London Transport have their journeys brightened by flashes of kickers and Y-fronts, sheltering 'vodka sausages' and other delights revealed on over 300,000 advertising poster sites. Robie Webster reports on a new computer system to help LT plan their poster views.

page 2

COMPUTER WEEKLY

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**CHILDREN'S
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The government must wake up to IT in '79

AT the beginning of 1978, the Prime Minister must have been thinking of making a public declaration of a New Year resolution for the government. It would no doubt have rend something like this: "We resolve to wake up to the importance and impact of microelectronics, and start doing something about it".

Government realisation of this (which is showing signs of dawning) is of fundamental importance, and support and encouragement for it are now essential.

This will require the government to take the real bull very firmly by the horns, rather than playing with the calf of microelectronics alone.

It is Computer Weekly's view that the government's tactics have been wrong, in theory at least.

As first argued after the Heilbronn Park conference in 1977 on the impact of information

technology, Computerview believes that the government plans should have been to help industry define and quantify new markets and production opportunities, show industry how the use of new information technology would help the attainment of these new goals, and then support and encourage the development of the new information technology components themselves.

However, what the government has actually achieved so far has been substantial. But the time has now come to make the fundamental step to support Information Technology and all that implies.

Only then will the support already committed to applications and production of microelectronics prove worthwhile.

The government's current efforts in providing financial support for both the microelectronics manufacturing industry in this country, and the development of applications using new technology has been more than laudable.

It has shown itself capable of keeping pace (or at least catching up) with the times.

Its latest efforts to engender greater awareness in industry of the potential of microelectronics (CW, December 21/28, 1978 and Micro News, page 9) are even more important.

For the first time the government has gone beyond providing money and prayers, and is attempting positively to pull industry by the nose.

These are good first steps, but of far more importance is where these microelectronic devices are used, rather than the things themselves. For example, there is now little distinction between telecommunications, office pro-

ducts and computers, all of which are heavy future users of microelectronics. These three previously distinct industrial sectors have converged to form an inter-related whole, which is information technology.

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Infoline launch will offer dial-up access to scientific databases

THE UK's first multi-database public information retrieval service, Infoline, is due to start operating within the next few weeks. The system will provide British researchers with dial-up access to scientific bibliographic databases such as INSPEC, Chemical Abstracts, and

World Patents Index at lower cost than the US and European services currently available.

A dedicated Univac 1100 at the CRC bureau will provide the service, being joined by a second processor later this year. The first database to be available will be Derwent's World Patents Index, followed at stages by Chemical Abstracts, INSPEC (Physics, Electronics, and Computers), BIOSIS (Biology), Corpendex (Engineering), Rindex (Pharmaceuticals), and Chemical Business Index.

Usage charges for the first two databases have been set at £50 per connect hour for WH and £32 per connect hour for the Chemical Abstracts bibliographic file. Ten access points or nodes are provided throughout the UK, with three in France and three in Germany. There will be an additional network charge except when using the London node.

This has been strenuously denied by IBM.

The report claims that Hewlett-Packard systems are used in atomic research and by the South African Armaments Board, and that systems from companies including Burroughs, CDC, Univac, Data General and General Automation are used in a variety of central and local government institutions.

The US government has banned the sale of computers and computer supplies to "military entities" in South Africa. These include the police and defence forces but exclude other government departments, such as the Department of Justice. In South Africa, this ban is considered by local businessmen to be

a "cosmetic gesture" as it is full of loopholes.

In the UK, where there is not yet any similar ban, ICL has been the focus of allegations from unions and the Anti-Apartheid Movement about its role in South Africa (CW, November 2, 1978).

These allegations included suggestions that ICL was supplying systems illegally to Rhodesia, using Malawi as a "back door," and was breaking international agreements by selling systems to Namibia and the Transkei Bantustan.

Defending its South African operations, ICL has published a special supplement to ICL News, an internal paper for its workforce. Contrary to reports, however, this supplement has been distributed to the normal ICL News readership and has not been "suppressed."

The aim of the supplement is to put on record ICL's South African activities and to allay some of the criticisms. However, the supplement's front-page headline "Opportunity in a land poised for take-off" has been criticised by some employees for going too far in promoting the virtues of the country.

In answer to allegations from the AAM and unions, the supplement states, "ICL UK has had no business dealings with ICL Central Africa in Rhodesia since sanctions were imposed," and that there is no ICL UK contact with the Rhodesian company and no contact with the Rhodesian government.

Regarding its operations in Namibia, the supplement says there was no illegal aspect to its trade because "there are no sanctions, UN or otherwise, against trading there."

ICL has plans to invest over £100,000 in this project.

COCs has plans to invest over

£4 million in South African education using its Plato system (CW, December 7, 1978).

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Downtime

by Clad

Red tape and type

ISN'T it nice how people out there in the big world think we computer people are supermen, and that our machines can do anything? I remember at the time of the moon landings someone wrote to London's Evening Standard asking why these wonderful computers that had guided the men to the moon weren't being used to solve our earthbound problems of overpopulation, starvation and unemployment.

Are they more sophisticated now? Well, there are plenty of people who think computers are going to take over the world, or help Hitler come back from the dead. On a smaller scale, see this remark from an article on computers in Red Tape (great title) the magazine of the Civil and Public Servants' Association. "One word processor, it is said, will replace ten typists, and it costs about £5,000."

How do we get it across to all the civil servants who are panicking that, with luck and a following wind, one word processor will replace one typist, and £5,000 is distinctly at the bargain end of the market? Mind you, later on in the article the author says that the Industrial Revolution took place in the 1870s, and that strikes a pretty severe blow to her credibility.

IBM please copy...

"IN the foreground, the sea. Behind Mount Fuji with its corona of eternal snows. All around, the finest tea plantations in Japan. An ideal situation for a monastery, this is the setting chosen by Fujitsu for its new computer factory. Peace and solitude. Every necessary condition met to enable the 1,200 employees to produce harmoniously. Thus the 400 celibates, young girls in the main, need not concern themselves with a daily journey to work. The company provides cells — sorry, studios — within the womb of the factory.

"Chaperones and provosts protect them from the outside world. And within this 'Nanban complex', inaugurated in 1978, engineers are putting the final touches to what they describe as 'the biggest computer in the world'. Jean-Michel Quatropoli, Le Monde, on the manufacture of the first Fujitsu M-201 large-scale IBM compatible mainframe.

Aptitude tests

I WAS concerned to see your "Aptitude tests 'meaningless' report" (CW, December 12, 1978). The tenor of the article on Guelph University's research was that all aptitude tests had been demonstrated to provide meaningless results, yet the last column suggests that only one test had been studied.

I must point out that there are other programming aptitude tests available which practical managers in DTP find very helpful. For example, the BIS Aptitude Test has been used during the last ten years in the

United States, Europe and Australia, and studies have shown a high correlation between test results and subsequent job performance.

If the word "aptitude" is used, then surely it could relate to the aptitude to perform specific tasks. I believe the reason for the success of the BIS Test is that it is designed to test different programming skills and not just to test generalised intelligence.

S. E. HELMS
Commercial Manager
Aptitude Testing Services
BIS Applied Systems

A matter of credibility...

AFTER reading Nicholas Enticknap's article, "Can you believe all you read in brochures?" I am left wondering somewhat more the credibility of the computing press rather than of manufacturers' glossies. The whole article is so full of half-truths and misconceptions that it can easily be dismissed for what it is, namely a hollow attempt to sensationalise an empty report.

On the subject of word-length, for example, Norman clearly has no grounds for his claim that the VAX is not a 32-bit machine. Yet Enticknap has padded his article with a couple of columns of irrelevance and inaccuracy, displaying in the process an obvious lack of appreciation of the addressing architecture of DEC computers.

As for the comments on compatibility, I would suggest that it is unwise to expect low-level program compatibility between machines, that I/O drivers and the like are intrinsically machine and operating system dependent and that, within the boundary conditions specified by DEC, the high level compatibility between RSX-11M and the VAX is remarkable.

The one area which could have formed the basis of valid complaint against DEC's compatibility claim, and which was totally ignored by Enticknap, concerns program libraries. For a program to benefit from the speed advantage of running in VAX native mode, it must consist entirely of VAX

native code, and this includes the libraries to which it is linked. For an installation which has a large investment in a home-grown MACRO-11 library, this can pose a severe problem in the absence of a MACRO-11 cross-assembler for the VAX.

So, although the answer to Enticknap's question is almost certainly "No", he has unfortunately chosen a bad example, poorly researched, in order to prove it. I wonder if your other articles, about which I am less informed, suffer from similar shortcomings.

D. MADEN

On-line Group Leader

Six Institute

for Nuclear Research

HOW amusing to read your article "Can you believe all you read in brochures?" (November 23, 1978), in which you warn would-be readers of manufacturers' brochures of the possible ambiguities contained therein.

If your intent was to demonstrate the dangers inherent in ill-written work, I would suggest you have admirably demonstrated your point.

Repeatedly you state (three times in fact) that the address range of the Digital Equipment VAX-11/780 is 512k bytes. As I am sure you realise, and as your calculations lead one to anticipate, the correct figure is 512 Mbytes.

Further, you devote great column space to the definition of a "word". As far as I know Digital defines this as 16 bits, irrespec-

tive of the machine one is referring to.

It so happens that the VAX-11 can use two words (of 16 bits) concurrently in access data. Clearly, the VAX-11 is a true 32-bit architecture, contrary to the impression your article leaves.

Computer Weekly's occurrence is likely to be the result of my inaccuracy, which is probably why your correspondent has not received a reply to my comments. A reply does not seem merit worthy in view of his inaccuracies.

A. W. WISHER

Leighton Buzzard

Bedfordshire

Computing in schools

DAVID Tinsley's "cri de cœur" on the failure of schools to keep up with technology (CW, December 7) will not go unnoticed. One area is two aspects to be considered. One is the extended use of the TV in the schools via systems such as Prestel. This seems a natural development.

The other aspect is mere convenience. Are schools, even assuming the availability of micro-based computer systems, to undertake computer studies on a large scale?

Industry, commerce and the public sector continue to hope for a supply of young people at age 18+, well grounded in English and numeracy and of a reasonable general educational standard. The high-fliers at 18+ readily absorb computer concepts and universities and polytechnics without previous school computer studies.

M. BRIDGER

Member of the BEC/TEC Committee for Computer Studies.

Highlighting the training problem

THE letter from the Computer Services Officer of the Royal Borough of Kensington and Chelsea (CW, November 30, 1978) highlights the problem faced both by computer users and by colleges that are attempting to help them.

Since 1966 Slough College of Higher Education has provided short computing courses for local schools and, over a wide area, information on careers in computing via careers conventions (organised in association with local authority careers ser-

vices) at the college or at schools. The need for commercially trained and oriented staff has always been emphasised, and we would expect that our efforts help to provide a basic appreciation of employment opportunities...

Colleges such as this welcome any opportunity to be involved in schemes designed to over-

come manpower shortages and would rapidly respond to approaches from individual employers, the BCS, the NCC or the Manpower Services Commission (Training Services Division).

H. B. ELLIOTT

Head of School

Mathematics & Computing

I HEARTILY agree with the three recommendations made by D. J. Cowtan (Letters, November 30, 1978), but I find it a little hard that he should accuse NCC — and the government for that matter — of doing nothing to alleviate the shortage. He really should read his Computer Weekly.

The course is well supported by industry, 41 students being placed with 25 firms for a six-month period of practical experience in 1978. Reports on the students from the firms indicate that the training is successful and that the students do a worthwhile job with minimal supervision.

HND courses are regarded as equivalent to a pass degree. Existing HND, Sandwich Courses in Computer Studies, with strong support from users, could rapidly produce large numbers of high calibre qualified staff.

GEORGE PENNEY
Careers Projects Manager
Threshold Scheme Director

... many have crossed the threshold.

LETTERS TO THE EDITOR

Two Computer Weekly readers have taken exception to my article "Can you believe all you read in brochures?" (CW, November 23, 1978), writes Nicholas Enticknap.

I find the violence of the opinions expressed in both letters (see below) rather mystifying, as the facts they adduce in support of them are meagre, and are with one exception either complementary to my article or a duplication of points that I made. However, the significant objection to both letters is that they have entirely missed the point. I was not writing a critique of the VAX. I was not attacking the VAX either. The fact that the report I was quoting related to the VAX was incidental to my argument. The subject I was discussing was, as the headline made clear, the validity of the descriptive language used in brochures.

Dr Maiden's comments on the degree of compatibility he has found between RSX-11M and VAX are therefore far from damaging to my article; in fact they provide

good supporting evidence for the point that compatibility is not an absolute term and needs defining.

Mr Wisher is right on one point. The address-range of the VAX is 512 Mbytes. I apologise to anyone who was misled by this slip. It is impossible to stress too strongly the principle "caveat emptor". It should be borne in mind at every stage by all intending purchasers of every kind of computer equipment.

NICHOLAS ENTICKNAP
Editor, Computer Weekly

Computer Weekly, November 23, 1978

Can you believe all you read in brochures?

Nicholas Enticknap

Editor, Computer Weekly

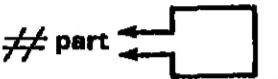
Computer Weekly, November 23, 1978

RELATIONAL DATABASES

One link in the chain

THIS is the last article in the present series. Parts 8 and 9 examined complex sets of relationships in some detail. This week we will conclude with an examination of the bill-of-materials type of relationship and will propose a more general relationship diagram notation. I conclude with a brief look at the close connection between relational design and structured programming.

Bill-of-materials (Involute) relationships: A data item can be directly related to itself. This is a characteristic of the bill-of-materials application where a part may be a component of several other parts, and it may itself be built up from several other parts; there is thus an n-to-n relationship between data item #part and itself. BOM structures can be represented on a relationship diagram by:



The PNP implementation is a file with two principal fields: a "made-up-from" #part and a "goes-into" #part. Extra fields can be added to contain intersection data particular to the relationship between one part and another; a typical extra field holds the quantity of one part used to build another part. The file would hold records of the following nature:

# part	intersection data	# part
made up from		

It is, however, difficult to draw a clear and unambiguous relationship diagram for a BOM structure which has, as it usually does in practice, intersection data.

General outline: The heavy reliance upon relationship diagrams makes it necessary to ensure that the diagrams themselves are unambiguous even for the most illusive kinds of data relationship. One suspect is the symbol



since it implies two separate concepts:
an n-to-n relationship between B and C
an n-to-1 relationship between the concatenation B, C and data item A.

You probably can't get it cheaper. You certainly won't get it quicker.

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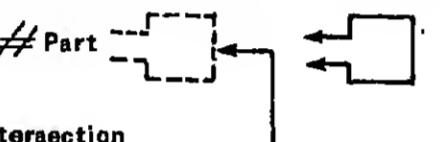
A more general notation exists which separates the concatenation of data items from the relationship between the concatenated items. The general symbol for concatenation is

with the obvious extension to more than two concatenated data items. Note that no arrowheads appear.

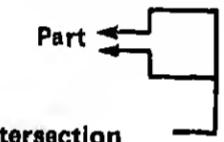
The following two diagrams are then equivalent:



The general relationship diagram or notation for a BOM structure with an intersection data item is:



although the contracted notation may be adequate:



The future: At the very beginning of this series the likely consequences of IBM's relational database storage were explored. But what of IMS, IBM's mainframe database/data communication



Part 10 By Max Stewart

This week Max Stewart concludes his 10-part tutorial series, using a bill-of-materials routine to demonstrate relationships. Stewart is divisional technical support manager at the Bethgate plant of Leyland Vehicles, the commercial vehicle section of BL.

package and probably the most complex and controversial system of its type extant?

Ted Codd, of IBM San Jose, demonstrated the potential of relational systems as long ago as 1970, not long after IMS became available, and in spite of IBM's cast-iron commitment to IMS there is a strong body of opinion both within and without IBM that the future lies in that direction. But IMS has a certain mystique: anyone with a feel for "bidirectional physical twin pointers" and "virtual logical children" has the IMS equivalent of Masonic handshake. Nevertheless, even some of its fondest adherents feel that IMS "grows like Topsy" and is a little dated. And its critics...?

Conclusion: Readers who have borne with me thus far and have still retained some enthusiasm may be forgiven for thinking that relational design is claimed to be a complete systems methodology. It isn't. It is one link in a chain:

- Decide on report or screen formats — analysis.
- Decide which source data items are needed (including those supplied interactively) — analysis.
- Create file or database structures with these data items — relational design.
- Decide how to process input files/screens to produce reports, output screens or files — structured design à la Jackson.

Structured design and relational design are complementary, fit neatly together and have the same objective: to produce clean designs based on data relationships rather than upon some arbitrary and machine-oriented idea of how we should process those data. Mike Jackson has said when writing about structured program design: "The computer system sees the world through the medium of its data structures... If, therefore, we give our program the same structure as the data it processes we can expect that we will have no difficulty in making an intelligent and correct program."

To which we can add: "...and if we can ensure that these data structures mirror the real world, we are doubly blessed".

* Principles of Program Design, Academic Press (1975)

STRUCTURED DESIGN AND RELATIONAL DESIGN ARE COMPLEMENTARY, FIT NEATLY TOGETHER AND HAVE THE SAME OBJECTIVE: TO PRODUCE CLEAN DESIGNS BASED ON DATA RELATIONSHIPS RATHER THAN UPON SOME ARBITRARY AND MACHINE-ORIENTED IDEA OF HOW WE SHOULD PROCESS THOSE DATA.

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PEOPLE AND EVENTS



International research director for Prime

PRIME has appointed a new director for its International Research and Development centre, based at Bedford. He is David Cheesman, formerly director of small systems (international) support with Unisys. In his new position, Cheesman will be responsible for the development of an API interpreter, research into cellular computing, interlinking Prime machines, and the development of a front end communications controller.

Cheesman was previously Director of Small Systems (International) Support with Unisys, where he was involved in the support of minicomputer and small business systems for Sperry Unisys throughout the world. Prior to this, Cheesman

Maggie Drawery has become an area sales manager with DCC International. She was previously a sales executive with MDS.

Neil Bowyer has been promoted to the position of sales manager UK for Control Data's international management time sharing service. He was previously sales manager for the company's commercial and accounting services.

DIARY

JANUARY 8
Software Design techniques — data networks. Fli Li N. Robertson, BCS East Anglia Branch. Thame Park Hotel, Thame, 1979.

Computing education in schools. P. McLean, BCS London branch/Maths Teachers centre, W. London, Holloway Hotel, Greenford, 1979.

Computers in retail distribution. J. E. Blake, BCS Cheltenham branch, Fairfield Hills, Croydon, 1979.

National police computer system or the police and court systems. ITCM, W. London, Oxford branch, Bull Hotel, 1979.

Computer fraud, how control and lose your money. J. M. Hoss, BCS Reading branch, Copper Inn, Pangbourne, 2000.

Visit to British Rail, Nottingham 2000 evening. 10 S Nottingham branch, Nottingham, 1979. Tel 0602 48311, ext 2012.

JANUARY 10
The impact on business organisations of rapid technological change. ITCB Business Information Systems group, City University, Newgate Street, EC1V 4PL, 1979.

New technology and its effect on IT. Barry Ashton, BCS Meridian group, NW1, London NW1, 1979.

Computer fraud. J. J. Kenny, BCS London branch, West Lodge Park Hotel, Cockfosters, 1979.

Vision systems, BCS Kingston branch, Regional Management Centre, New Malden, Surrey, 1979.

P. Shaw, chairman of BCS branches Board, BCS Hampshire branch, The Tabby Cat, Chandler's Ford, 1979.

JANUARY 11
IBM CUA Management group, Mount Royal Hotel, London, 14.00.

JANUARY 12
Teaching laboratories for microcomputers and Microprocessor Application Group. BCS East Anglia Branch, Cambridge 1979. TIP Monitor, BCS Kent branch, Computing Lab, University of Kent at Canterbury, 1979.

Would you recognise a good computer if you saw one? Tony Benn, BCS Oxford branch, Oxford Europa Motor Lodge, Oxford, 1979.

JANUARY 17
Teaching laboratories for automation. Tony Benn, B. Sherman, Dr. David Eversley, Polytechnic of Central London, London WC1, 1979.

An update on planning systems from ICL's point of view. Peter Cook, BCS Urban Planning group, Lambs, 3 Buckingham Gate, London SW1, 1979. Tel 01-580 24343, ext 24.

Workshop on changing computers. Robin Scott, BCS Cheltenham and Gloucester Gola Club, Gloucester Gardens, Gloucester, 1979.

Visit to Unisys, BCS Birmingham branch, Birmingham, 18.00. Details from R. Watkinson, Bromsgrove 77077, ext 22.

Workshop on demand driven computer graphics software. BCS Newcastle branch, Newcastle, 1979. Novelty L. Smith Newcastle 27320, ext 102.

JANUARY 18
Teaching laboratories for automation. Tony Benn, B. Sherman, Dr. David Eversley, Polytechnic of Central London, London SW1, 1979.

User terminals for communication systems, colloquium IEF, Savoy Place, London WC2, 1979. Register 01-321 1571, ext 292.

Edited by Nancy Pocock



CMC offers work experience

COMPUTER Machinery Company is helping in a Work Experience scheme at its Hemel Hempstead plant. Many local schoolchildren have already spent a week there gaining experience of industry and electronic assembly. The scheme has been organised by the careers office of Dacorum Council, and invites schools and firms in the Hemel Hempstead area to cooperate in giving children in their final year at school experience of working in industry. Seen in our picture is 15-year-old Desmond Fernandes being shown the intricacies of the printed circuit board by senior chargeman Paul Bolt.

John Neaves, until recently sales director of Scan Computers, has been appointed managing director of the company, which is the minicomputer subsidiary of Scan Data International.

Jim Mehlhans has been appointed hardware development manager for Computer Machinery Company. He was previously chief engineer with Computing Devices of Hastings, a subsidiary of Control Data.

David Easott has been appointed personnel recruitment consultant for Computer People North. He was previously sales manager for the northern area with Kolor Consultants. Bernard Gibbons becomes a recruitment consultant, joining the

company from ICL, where he was a support manager. Jane Byrne, formerly a personnel officer with BOC, has been appointed personnel co-ordinator in the recruitment division of CPN.

Mike Burdett has joined Rediffon Computers as branch manager for the South-East branch. He was formerly a sales manager with Burroughs. Previously a consultant with MSS Consultants, Peter Elliff has been appointed manager of manufacturing control. Warren Davies has transferred from South-West branch where he was a senior systems analyst, to Midlands branch where he will be territory manager.

Richard Moore has been appointed by LUCS as a specialist in financial and distributed processing computer services. He was formerly with North-western University's 4.7 Chess program, the current IFIP World title holder.

PA executives are well aware that there is bound to be a hard core of industrialists that will refuse to be involved without considerable persuasion.

The DoI realises that this is

MICRO NEWS

Edited by Martin Banks

PA International to help with government's micro awareness programme

THE UK government is now moving into gear in its push to promote not only the application of the micro, but also a much greater awareness of its capabilities in general industry.

The appointment of management consultants PA International to help the Department of Industry organise its awareness programme (CW, December 21/28, 1978) is now taking government action to point to a considerable lack of understanding and/or interest in applying new technology.

For example, under the MAPCON project support scheme there have been some 150 proposals submitted for funding approval, but only 20 of these have come from the mechanical engineering sector of industry.

PA's objectives are to secure a full understanding among industrial decision makers and trade unions of the pace of the technology and the breadth of its applications in product design and in production methods.

According to PA International estimations, the total funding committed to supporting microelectronics and its applications with EEC countries now totals £1,000 million.

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Personal status

IT had to happen sooner or later — someone had to consider that a TV was too insignificant as a status symbol for the motor car. To be one-up now, it's a personal computer or nothing.

Panther Caro, maker of what has been called the most prestigious car in the world, the Panther De Ville saloon, has fitted a Commodore Pet in place of the rear seat television, so that its elite band of customers (including such well-droppeds as Lis Taylor and Oliver Reed) will play lunar londor or run business programs to whilst evading the radius of traffic jams.

The story of how, why, where and when all this was done can be found in this month's issue of hobbyist magazine Practical Computing.

PO puts in service first telex exchange with stored program control

If Anshelm, California which was bought out by Pitless (CW, January 8, 1977) and later by the Industrial section of the Post Office Engineering Union.

It is now being installed in three phases, and the full benefits of stored program control, including store and forward, multi-addressing and re-routing, will be realised in coming months.

The UK's 76,000 telex users are currently achieving a 35 per cent success rate in connecting account for 40 per cent of total. This low figure is due to busy terminals and congested exchanges abroad. Despite competition from higher speed transmission, which the Post Office plans to introduce the year, the number of UK telex users is expected to grow to 200,000 before it levels off around 1988. This is partly because telex is accepted as a legal record of a message.

The new starlet is for a 4G model due to be operational in 1980 in Keybridge House, also in London, on the south side of the River. It will initially handle 11,000 lines, building up to 28,000, in links with 170 countries. It will be able to switch 360,000 calls per hour, against the model 70's 72,000, have a much faster store and forward facility, need fewer tapes to store, consume half the power and have improved maintenance facilities.

It is claimed to be the largest and most sophisticated change of its type in the world.

Play of the 12 entrants in this Swiss-style tournament ranged from "Close B" to "expert".

Belle had four outright wins,

against Chess 4.7, Chaos (Amral 470/V6), Blitz (Univac 1100) and the British program Mike running on a Motorola 8800.

Chess 4.7 was runner-up followed by a three-way tie among Chaos, Blitz and Sargon (running on a Zilog 80 micro-computer). Duke University's Duchess (IBM 370/108), which shared second place with the Moscow program Kulisa in last year's IFIP World Championship, trailed in sixth place.

It will be interesting to see what changes will occur in 1980.

Chess 4.7 will be a strong favourite in 1981.

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Play of the 12 entrants in this Swiss-style tournament ranged from "Close B" to "expert".

Belle had four outright wins,

against Chess 4.7, Chaos (Amral 470/V6), Blitz and Sargon (running on a Zilog 80 micro-computer). Duke University's Duchess (IBM 370/108), which shared second place with the Moscow program Kulisa in last year's IFIP World Championship, trailed in sixth place.

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White House view of technology transfer

A White House report on technology transfer was presented to Congress last year (CW, September 14). HESH WIENER presents a condensation of the report, with particular emphasis on its implications for national security.

THE most interesting technologies discussed in the White House report on technology transfer sent to the US Congress (Guest Computerview, September 14), are those which have significant national security implications rather than those which deal with agriculture, health, or education.

Technology transfer can be defined as the act of conveying know-how from one country to another. The means may involve the export of technical data, equipment, and processes.

The effectiveness of technology transfer depends not only on what is transferred, and how, but also on the capacity of the receiving country to absorb it and put it to work.

The term "technology transfer" is also frequently employed in a broader sense to refer to the export of products (end-items) embodying particular technologies.

Secondly, know-how might be transferred to produce products, such as electronic components, for the civil sector of another

country. These products might in turn be applied to military as well as civil uses.

Thirdly, know-how supplied for civil purposes might be diffused from the civil sector to the military.

Finally, it is sometimes argued that if imported technology has a resource-releasing effect (through more efficient use of resources), resources released from the civil sector might be redeployed in support of military programmes.

Certainly, in the US, much technology is in the public domain, and there is very little the government can do (even if it wished to) about controlling the flow of information through technical and trade journals, for example. In many cases, however, technology in the public domain is not the most advanced technology, except in such fields as agriculture, health, education, and construction.

In the case of both weapons-related and dual-use technologies, it should not be assumed that trying to retain specific technologies in the US would ensure technological superiority. Such effort alone might be counterproductive.

Government control is therefore synonymous with government ownership. In addition to having the authority to control exports, the government can impose security classification.

In the case of Nato, sharing advanced weapons technology strengthens the common defence. One of the most common forms of the transfer of weapons-related technology among allies is the licensed manufacture or co-production of advanced weapons systems and components. Data transfers and co-operative research and development are also used.

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In general, the US offers only limited incentives for the transfer of technology abroad. In the case of the Export/Import Bank, most of the exports supported by the bank are capital goods and thus to a degree entail the transfer of technology.

However, it is not appropriate to characterise the bank's programs as "incentives" to transfer technology abroad. Rather, the bank's activities are

side civil uses. Computers and computer peripherals account for more than half the total of CoCom-approved exceptions.

Where such exceptions are made, however, it is because the circumstances or conditions of the export make clear that the exports would not have adverse military implications.

Closer and effective cooperation among the US and other major nuclear supplier states has been developed in the Nuclear Suppliers Group, whose major effort thus far has been development of guidelines for the transfer of nuclear technology and materials.

There is very little hard evidence that technical data of US origin has leaked to the East through Third World countries.

Controls are imposed on re-transfers or re-exports. Most cases of diversion of US know-how to the East involve third industries in one way or another. However, the number of proven cases of such diversions is quite limited. Other industrialised Nato countries and Japan co-operate with the US in CoCom to co-ordinate controls on the export of strategic products and technologies.

Non-aligned Western countries of course do not participate in CoCom. For their own reasons, however, they too control certain exports.

The Soviet Union has been willing to sell sophisticated weapons to almost any developing country, has accepted somewhat lower prices than those for comparable Western equipment, and has been able to make fast deliveries.

The US and the Soviet Union have initiated talks concerning restrictions on conventional arms transfers.

The US recognises the proliferation dangers inherent in the spread of certain sensitive technologies (uranium enrichment, reprocessing, and heavy water production) and has maintained a policy of not authorising the export of such facilities and of urging other supplier nations to exercise similar restraints.

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London Transport has more than a quarter of a million poster sites, some of them on buses and trains whose routes are prone to change at short notice. The Media system described here will help with the mammoth task of keeping track of them, and will enable ad sales staff to market the more popular sites at higher rates.

Media keeps London Transport posterised

With about 300,000 poster sites around London on its buses, trams and underground stations, London Transport has a very loud voice in terms of advertising.

Loud enough at least to make us familiar with the idea that by drinking a particular vodka "anything could happen", or that to go places we should "fly the tube".

But it's not easy to keep track of over a quarter of a million pieces of paper. And this is where Media, a computer system under development at London Transport's data processing centre in Newman Street, comes in.

The system has been designed so that a far more detailed and accessible picture of the posters fixed to vehicles and station walls can be built up. It is now impossible to "lose" a poster within the maze-like tunnels of the underground due to the sheer number of changes involved.

At present, London Transport has a team of sales staff selling space, either in small "one off" quantities, or in blocks or parts of big campaigns. There are three departments, each catering separately for buses, trams and the underground stations.

The job is demanding and, as Fred Iles, Media project manager at London Transport, said, "Salesmen have been particularly happy to get 50% of the area they wanted for a customer, there being no guarantee that specific sites could be allocated."

This has led to a waste of resources, as advertisers sometimes wish to have posters pasted up at the more heavily used stations such as Oxford Street where large numbers of shoppers and tourists pass through.

It is likely now that Media can help market such "high exposure" sites at more lucrative rates.

The reason for the lack of control is that the manual filing system being used by sales staff at LT's Lindsay House offices cannot now cope with all the variable types of data involved. Among these is the fact that there are many types of buses.

With a fleet of 6,000 buses, the data to be held is very detailed and problems arise if buses on one route are moved to another, taking their original posters with them.

"The main complaints from advertisers has been that they did not get market coverage information and, that they were not given precise information on where the posters had been placed," said Iles.

To combat this problem, we started thinking about another system, and in 1978 had some consultations with an outside

software firm. Its recommendation was that in order to get a "more orderly" house and better administrative control over poster sales a computer system was required."

Work then began in earnest on developing Media, which runs under Maxinop on LT's own ICL 1904S at Newman Street; the development team being Fred Iles and David Trettheway, a senior analyst at LT.

The only problem about using such an unconventional method for what has traditionally been a labour intensive job, is that you cannot readily gauge how suc-

cessful it will be until it is operational.

"In justify such a project we can only say that we expect to get tangible savings," explained Iles, "but as yet we can't quantify this. Certainly, there are likely to be staff savings - not redundancies, but redeployment of staff within London Transport."

Operator of Media will be simple. All poster sites will be numbered or coded in some unique way so that when sales are made, information relating to each site is fed into the system via three online VDUs.

This enables an up-to-date



With its Media system, London Transport will soon be able to provide a much more flexible service to advertisers. Due to come into operation in August, it has taken about two years and £50,000 to develop. Our picture shows Fred Iles (left) Media project manager, and David Trettheway, a senior systems analyst.

record of availability and allocation of spaces and posters to be kept. Once everything is checked on new sales, instructions telling poster staff where to paste up the adverts are produced on pre-printed forms.

With the system it will be easier for sales staff to see when posters come to the end of their campaign life and to allocate such areas to new posters, thus gaining more revenue.

The same three VDUs used for input of data will also be used for online checks and they will eventually be able to access about 20 Mbytes of data.

In two months' time, the same application for trams will be introduced and in August, the full

procedure of availability, allocation and fixing instructions for trains, buses and stations will be integrated with others already running.

"One idea is that we could link Media with our Bus Accounting and Revenue Control and Rail Accounting and Revenue Control systems to provide us with better statistics on the volume of passengers at each garage or station. This will also help us to offer advertisers further information as to what exposure their adverts will get," said Iles.

—ROBIN WEBSTER

Practical advice for designers of automated office systems

THERE is widespread agreement that automation of office functions will proceed since over the next decade. As yet, however, there is very little experience of what this involves; in the UK, even the use of word processing systems is in its infancy. So the opportunity to hear from someone with years of practical experience is a welcome one.

Such an opportunity arose recently at the Information Studies Ltd conference "Towards the automated office." Among the speakers was Howard Lee Morgan of the University of Pennsylvania's Wharton School, who described a system designed to support the work of the School's academic staff, and gave would-be designers of automated office systems some practical advice.

opportunities that are now open to them.

Two particular facets of the architectural approach were highlighted by Morgan. First, the name of the game is automation, and not mechanisation, which is the state of the art in most installations today. The object is not merely the more efficient production of paper. Secondly, these systems should be very people-oriented.

Consideration of what people actually do in offices has determined the functions built into the Wharton system. First, a lot of time is spent communicating. A second major consumer is information acquisition, storage and retrieval.

In contrast, the amount of time spent on the analysing and focusing of decisions has been found to be a rarity two per cent. Automation should be able to improve managerial effectiveness by making uninterrupted time available. The other two functions incorporated into the system are described as "personal assistant" and "task management."

Morgan described the design approach as architectural, implying a concern about the context within which the system is embedded and about what is put inside it. In this context he noted that the major challenge presented by office automation is organisational — it lies in getting organisations to accept the

new system.

our for the flexibility of presentation it provides. One aspect of this is that you can split up a screen by giving various portions of it different background colours.

The screen should also be split at the system level, as done on the IBM 8100 and Hewlett-Packard HP300. As Morgan says, "You normally have more than one piece of paper on your desk at any one time."

Another point is that you always need more addressable memory than you think. Each generation of computers has repeated the same error of underestimating the size of main memory required. Some secondary storage too is required, because the manager will want access to some information which he doesn't want other system users to see.

On the software side, the basic tools developed for the system include a document preparation editor, an electronic mail facility, a calendar maintenance system, a hierarchical filing system, a task manager and a database maintenance system. A general observation made by Morgan was that these systems must be "friendly."

For example, a message reading "Illegal Entry" is definitely not friendly. System users who are not skilled typists

are likely to make errors such as misspellings, and the system would be designed to cater for this, in the same way that a human being would. There should be extensive help procedures, and powerful menus describing the alternative courses and action available.

The electronic mail facility enables users to send messages either to named individuals or to job positions; and of course it doesn't matter whether the recipient is in his office at that time or not. When he does "open his mail," he can with one keystroke set up the appropriate action mode. He can decide to reply, and the system is set up so that this is as easy as telling his secretary "write to so and so and tell him I agree to his proposal."

In the same way as she would then formulate, type and transmit the reply without further instruction, so can the system eliminate many of the overheads. An instruction to file requires similarly little effort to effect the desired action.

An important point about electronic mail, said Morgan, was to break users into the system gently. People take some time to get used to the idea of going to the terminal to see what's come in. In the Wharton School, new users are given a build-up of dummy messages, lasting about a month.

Although the Wharton system is still being actively developed, it is a practical system which is being used by 2,800 different people, about 100 of whom use it every day. Morgan stresses that it is essentially different from a data processing system, in that it

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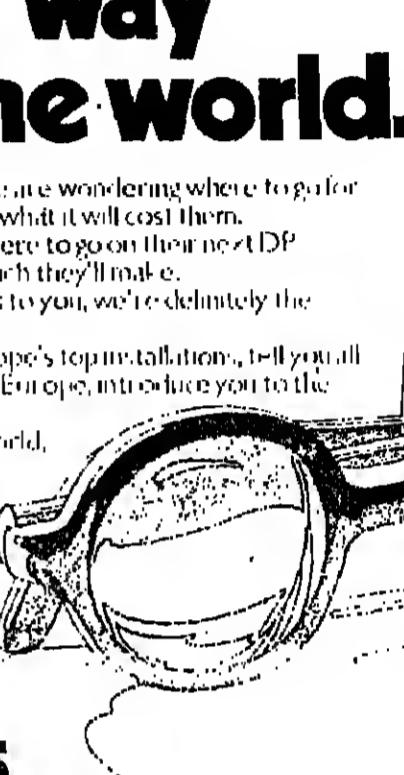
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SYSTEMS ANALYST/PROGRAMMER

(Ref RN 546)
(Scientific and Technical Applications)
£5,882-£6,064 p.a.

Applications are invited for the above post in the Computer Services Technical Systems team based at the Authority's computer centre in Central Bradford. Duties include the provision of support to engineering and scientific users and the development and implementation of a wide range of technical programs and packages on the Authority's ICL 2970.

Applicants, male or female, should hold a degree, preferably in Mathematics, Engineering or a Science, and have had at least three years' practical experience in the technical computer applications field. A working knowledge of one or more of FORTRAN, ALGOL, BASIC or COBOL would be an advantage.

Relocation expenses and disturbance allowance are payable in approved cases.

Application forms are available from the Regional Personnel Officer, Yorkshire Water Authority, West Riding House, 87 Alhambra Street, Leeds LS1 5AA (Tel: Leeds 448201 ext. 289), to whom they should be returned by 15th January, 1979, quoting the appropriate reference number.

Yorkshire Water

Six of the Best to travel worldwide

We now need 6 more professionals to strengthen our top international software teams. Enjoying comprehensive training schemes and outstanding career prospects, our teams install advanced systems at sites throughout the world. One of our Senior Programmers is now in Los Angeles — and another has just returned from the Dominican Republic before flying out to Trinidad. Further planned projects involve assignments in Copenhagen, Bahrain, Kuala Lumpur, Paraguay, Chile and Athens.

With offices in London, New York and Hong Kong and plans to open further premises in Europe and the Far East — we're offering you a unique opportunity to develop your potential to the full and take off on a structured career path leading to the highest levels of management.

BIS Software Limited is a fast-growing Company specialising in the design, development and implementation of advanced DP systems. Operating internationally in the banking and insurance markets, we have successfully installed some 100 systems for over 30 international organisations.

Writing in RPG II, you'll be involved in systems development and systems implementation worldwide. Initially you'll be working with IBM System 34 (full

in-house training will be given) — and further plans include the development of advanced telecommunication systems on IBM System 38 and Series 1 machines.

Senior Programmers

— with the ability to motivate direct programming teams. You should have a minimum of 3 years experience in programming, at least one of which must have been at senior programming level. Detailed knowledge of RPG II will be expected.

Programmers

You should have at least 1 year's experience of writing programs in RPG II on any machine — although experience of IBM equipment would be a distinct advantage.

We offer top salaries and a range of generous benefits, including a profit-linked bonus scheme, pension, insurance and sickness schemes, over 4 weeks holiday, season ticket loans, luncheon vouchers etc.

Contact Jim Hewitt on 01-928 9511 or send him a brief C.V.

BIS Software Limited
York House, 199 Westminster Bridge Road
London SE1 7UT
Telephone 01-928 9511



ANALYST/PROGRAMMERS
With real-time experience and good German sought for permanent employment by established software consultancy in SW Germany. Salary negotiable. Removals expenses plus living benefits.
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ENGINEERING — SYSTEMS SPECIALISTS

TO FORM THE NUCLEUS OF THIS GERMAN BASED EUROPEAN OPERATION

Are you presently employed in a safe and sterile environment? Yes — Read on, you may find your way out!

Think about it!

No — Read on, you are the sort of go ahead people this industry desperately needs.

We require well versed mainframe systems engineers who wish to develop their technical/management skills in a commercial environment. The sort of people to whom these positions will appeal, are those who no longer accept that a pre-ordained, service orientated career development path is for them, in other words leaders in the industry, not followers of it.

We can provide people with the opportunity to form the nucleus, and by definition the future European systems and support management function, on a new product range with a well established and prosperous mini computer manufacturer.

We require 4 to 5 years' mainframe systems knowledge, hardware and systems software, preferably IBM 370 series, but we will be happy to talk to all mainframe systems engineers.

We can offer a salary of up to £25K + relocation + car, 4 weeks holiday, and paid time off to attend German lessons. Initial training will be in the USA.

In the first instance telephone us quoting Ref. JMC/4 to arrange an interview.



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ANALYSTS

WHAT DO YOU LOOK FOR IN A NEW JOB?

WHILE PRIORITIES VARY WE SUGGEST THE MOST IMPORTANT FACTORS ARE: JOB CONTENT SALARY LOCATION PROSPECTS

We feel our clients offer an attractive blend of these factors and if you agree, we would be pleased to discuss with you the opportunities they offer.

Consider these facts:

CONTENT

All brand new development work on interesting commercial systems. Work processed on a sophisticated Univac 90/30 installation. The existing DP Department consists of approximately 30 people who are young, enthusiastic and friendly.

SALARY

For Senior Systems Analysts with say, 6 years in DP (3 in programming and 3 in analysis) — up to £6,850. For less experienced Analysts or Programmer Analysts up to £5,750. Other conditions include a 6½-hour day, non-contributory pension scheme and subsidised canteen.

LOCATION

Central London
5 minutes' walk from Blackfriars or Holborn Viaduct Mainline Stations.

PROSPECTS

The Department has just been given the "Go-ahead" to expand and develop, and therefore the opportunities for progress are excellent. Staff benefit by full backing and encouragement from management and there is a very positive attitude to promotion from within.

Please telephone Bob Bower, the Advising Director, to arrange a mutually convenient meeting to discuss the situation further. Being located close to our Clients, we are able to arrange immediate interviews with them where appropriate.

Reference CT/112/1

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MYRIAD COMMERCIAL APPLICATIONS SPECIALIST — EIS

BERKSHIRE
£7000-£8000

EIS is the European Information Systems Department of a major multi-national manufacturing company with its U.K. headquarters located in Reading. The department is responsible for the production of an interesting range of commercial systems providing essential business information to European national profit-centres with a central reporting function in the European H.Q. An extensive communications network facilitates remote computing and the British company is currently installing a large mainframe. Established in 1957 the organisation has maintained progressive annual growth rate enabling it to offer exceptional career progression to professional staff.

This is a first-class opportunity for the successful candidate to apply and gain valuable experience in an expanding organisation and provides outstanding scope for rapid career progression. A good commencing salary is offered and full relocation expenses will be reimbursed where appropriate.

Ref. SW1/0401

MYRIAD APPOINTMENTS LIMITED Computer Personnel Consultants
Telephone or write to: 30 Fleet Street London EC4Y 1AA 01-353 0981 (24 hrs)

SYSTEMS CONSULTANTS — SYSTEMS ENGINEERS CHOOSE **GERMANY** SALARIES TO DM 90,000

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- International travel.
- High earnings and large company benefits.
- Extensive training (including German language).

We are looking for experienced systems people to spearhead our attack on the medium-to-large systems market with our revolutionary new products.

You will probably have some three years' experience with medium/large IBM, ICL, Univac, Honeywell Systems. A good knowledge of Assembler and Cobol, DOS/V — VM/370 or equivalent. A knowledge of PL/I or RPG-II would be an advantage.

After formal product training you may choose to work in MUNICH-FRANKFURT-DUSSELDORF or HAMBURG and a full German language course will be provided.

ACTION — Phone or write quoting reference DS-2 for an informed discussion and an interview in London.



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The U.K. and European divisions of a U.S. public corporation have openings in their London, Zurich and other European offices for Senior Database Analysts, Designers and Application Programmers with extensive hardware and software experience. Experience in DBMS currently in use on major main-frame and minicomputer systems. Particular interest are persons with expertise in IMS, DB/DC, ADABAS, DBMS, RDBMS etc. Hardware backgrounds are of little importance — what is essential is the depth of experience in your relevant area of database expertise. Our client is anxious to maintain their pre-eminence worldwide by attracting proven and potential talent.

Message switching is your forte and you value working at the cutting edge of developments in the switching field such as System-X then we have one client's authority to initiate serious negotiation with a view to offering you what can only be described as a competitive career opportunity involving advanced applications in an environment of creativity, innovation and design freedom, coupled with significant autonomy. The applicants will ideally suit experienced message switching applicants (2-5 years). One client specifically requires Senior Analysts, Analyst/Programmers, Systems Designers and Programmers at various levels of seniority.

MATRIX360 Oxford Street
London W1N 8RA
01-491 4635

01-491 4635

Software Engineer IBM EXPERIENCE

Middlesex/West London

The Data Communications Division of a \$3 Billion Corporation operates a small and highly successful company employing about 80 people World Wide. The bulk of the day-to-day sales and support is handled by about 37 distributor companies in over 40 countries.

One of the main functions at this service centre is the on-going new product evaluation. The continual process of introducing new product lines to the existing Hardware and Software range stimulates work content and job satisfaction for the people involved.

Plans for 1979 involve the introduction of many new products which will have to be evaluated, tested and supported through distribution. An important new product range incorporates a direct channel interface into IBM. Accordingly for this appointment we need candidates with experience of IBM or IBM compatible equipment. Specifically, we would prefer people with experience of IBM software including access methods, TCP Software and interfacing with minicomputer environments, although people with similar experience at other mainframes would be considered.

This appointment calls for a highly qualified individual who has the strength and ability to evaluate market trends, organise training lectures and to take responsibility for his own specialised area. Long-term opportunities exist for promotion and growth within this tight knit organisation.

CW/1/12

Programmers/ Designers

MINI-MICROS

£4500-£6250

One of the largest independent Systems Houses who have offices throughout the United Kingdom and Western Europe, have an urgent need for PROGRAMMERS/DESIGNERS for their READING office.

Their clients range from computer manufacturers, nationalised industries, process control equipment manufacturers, through to small local businesses. With such a wide client base they are able to offer varied experience and careers leading to areas such as Project Management, Management Consultancy, Systems Analysis and Design.

The range of mini and micros on which they work is only exceeded by the variety of backgrounds and experience they are prepared to consider applicants from. Experience on the following hardware would be of special interest: 2903, 880s, Osborne 2200 & 5500, PDP-8, 10 and 11, B800s, Zilog, Intel, Motorola and Texas micros.

Opportunities exist in their Small Business Systems, Industrial and Process Control and Basic Software Groups. Applicants should have at least 18 months' experience, and be interested in progressing into other areas of computing.

CW/1/12

Sprechen Sie Deutsch?

Minis/Mainframes

up to £17500

One of the most prestigious software companies in Europe is currently expanding their German operations in Central Germany. Their business is based on a wide range of projects currently being developed on both Minis and Mainframes.

Ours to this planned expansion, they want to meet several computer professionals who are competent in German. Technical background can be spread but current priorities call for experience of system 370, 34, Nixdol, POP-11, Nova, Siemens 330 and the internals of IBM operation systems.

While our client can accommodate people seeking employment for a year or so, they definitely want candidates with medium to long ideas about settling in Germany and building a career within the firm. Although they require specialists in the above skills they are also very interested in recruiting junior people with circa two years' experience to develop their careers.

CW/1/12

Analysts & Programmers

London to £7000 + Car Scheme

An exciting opportunity has developed for ambitious Analysts and Programmers to join a medium size, expanding computer company involved in automotive and finance industries.

Our client's computer operations are based on NCR CENTURY 75, which will be upgraded in April 1979, to a 75-70. Development is in progress on an interactive on-line communications system using audio response equipment on a nationwide basis.

They would like to hear from Analysts with a Programming background and have had some proven systems experience. It is unlikely you will have had less than five years in the U.P. industry. Also we would like to hear from N.C.R. trained Programmers who have had between 1-5 years' experience.

Continuing company growth based on the development of external customers' systems, guarantees excellent prospects for sensible employees who are prepared to work hard.

CW/1/12

Opportunities in Europe for 1979

Attractive Salaries:

1. CAD/CAM — Mechanical Eng.	HOLLAND
2. Technical Analyst/Mini Software	HOLLAND
3. Siemens 330 Software	GERMANY
4. IBM Systems Programmers	GERMANY
5. Production Control Analyst	GERMANY
6. 32-Bit Machine Software	SWITZERLAND
7. IBM Systems Engineer	FRANCE
8. Network Designer/Mainframe/Mini	SOUTHERN EUROPE
9. Real-time Consultant	HOLLAND

Candidates interested in moving to the Continent with the above opportunities, should contact us to discuss those opportunities.

CW/1/12

Systems Consultants

New Product Range

Continental Europe Up to £15000

Our client is one of the world's pre-eminent systems software companies. In co-operation with several of Europe's leading computer manufacturers they are working in the planning and design of new systems based on both mainframes and minicomputers.

For one major manufacturer they are setting up a central software planning department whose task is to define and design a range of systems software capable of sustaining a new range of minicomputer products in a market sector orientated towards distributed systems, networks and on-line interactive commercial applications.

Additional Senior Consultants are required (minimum ten years' experience) with outstanding knowledge in the areas of real-time systems, operating systems and data base design.

CW/1/12

European Advisor

On-Line Business Systems

£8000-£10000

A major UK systems company is developing on-line commercial systems for installation in a number of European locations.

They require a senior consultant to assist the end-user — an American multi-national organization — by analysing his requirements in each country and planning for the installation of each system. In a second phase, local systems will be linked to a central IBM bureau forming a European-wide distributed processing network.

Candidates must have a sound knowledge of on-line commercial applications; an appreciation of the potential advantages and limitations of minicomputers and the personal ability to work effectively with management and staff of varying levels and nationalities.

The UK systems company is part of European systems group and offers attractive benefits plus excellent opportunities for career development.

CW/1/12

Distribution Designers

Multi-million Pound Development

Southern Europe £8000-£12000

Our client is an international systems company engaged in specifying and designing a nation-wide computing network for a distribution organization. The end result will comprise a wide range of on-line and batch applications operating on a network of up to fifty mainframes and minicomputers.

They require analyst/designers with experience in any of the following:

- on-line minicomputer systems
- applications for order entry and inventory control
- communications
- hardware/software integration

The project offers the opportunity for short or long-term assignments based in a capital city of Southern Europe. Remuneration, benefits and allowances are commensurate with the scope and importance of the project.

CW/1/12

Central Computing Consultants

KINGSTON: 44 Wood Street, Kingston upon Thames, Surrey, England, Telephone 01-549 3212, Telex 27950

DUBLIN: Canberra House, 24 Lower Leeson Street, Dublin 2, Telephone 789577 (5 Lines)

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IMS PL/1 PROGRAMMER. MIDLANDS	c. £230
IBM COBOL PROGRAMMERS. MIDLANDS	c. £230
COBOL PROGRAMMERS. MIDLANDS, NORTHWEST	c. £220
ICL	
2903 ANALYST/PROGRAMMER. NORTH WEST	c. £230
2903 PROGRAMMERS. NORTH	c. £220
1900 COBOL GH/III PROGRAMMER. MIDLANDS, NORTH WEST	c. £215
2960/70 VMEB / MEK COBOL PROGRAMMERS. NORTH	c. £220
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OTHERS	
PDP11 TECHNICAL SPECIALISTS. MIDLANDS	c. £250
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UNIVAC COBOL PROGRAMMERS. MIDLANDS, NORTH WEST	c. £220

Ring: Perry Butler or Judy Leas
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E200 ICL 2903 TPS EXP	ESSEX	E230 POP MACRO II RXIIM	CITY
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OVERSEAS

£ EXEC RATE	IBM COBOL GERMAN SPEAKING
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£375 p.w.	PDP FORTRAN KN OF FRENCH
£375 p.w.	IBM SYST PROG OS CICS
£425 p.w.	PDP MACRO II RXIIM
£375 p.w.	UNIVAC 1100 COBOL

Ring Christine Kay/Dave Hayton, 734 0152/6 (24 hrs)

As a successful international recruitment and contract organisation we have considerable experience in assisting companies in industry and commerce throughout the UK and Europe, call your nearest K.P.S.L. office and discuss the many opportunities available to you.

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27 NOEL STREET, LONDON, W.1 TELEPHONE 01-734 0152/6 (24 HOURS)
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OFFICES: AMSTERDAM, PARIS, MANCHESTER, BIRMINGHAM

AREA DEVELOPMENT MANAGER SURREY

Our client is an international manufacturing company with assembly units throughout Europe, US and CIS. We seek an international telecommunications engineer for voice messaging and data linking the UK, Holland and USA. The successful candidate will have responsibility for both US and Dutch operations, provide advice to head office on automation services and management of local contractors. There is also scope to evaluate and advise on new hardware so familiarity with current hardware technology and related telecommunications equipment is a must.

- Competitive package
- Standard telephone, sports and social club
- Location rural and pleasant park grounds
- Relocation expenses

EDP AUDIT

London based EDP audit company currently extending application both in UK and overseas. A highly motivated professional is needed to undertake formal audits of world wide network of data centres to undertake system reviews and to evaluate and implement recommendations. Experience in the cycle of systems development from project initiation through to line running and formal sign off. Also EDP audit/review programme for preparing systems for conversion to new hardware. Ideal applicant will have experience in IBM and probably PDP, on-line experience and use of audit/ethical programme and/or programming knowledge. REF 1954

- Friendly atmosphere
- Excellent job from home
- Non contributory life assurance
- Pension scheme

• Unusual route for career development

REF 1954

SENIOR SYSTEMS ANALYST

LONDON

Excellent opportunity exists for a senior systems analyst to work within a large international company having extensive experience in the design and implementation of large scale systems. Ideal applicants should have at least 2 years experience in Analysis, Design and Implementation of large systems using MACRO ASSEMBLER RS-II and RTI. Ideal applicants should have 5 years experience in Real Time Programming using MACRO ASSEMBLER and RSX with message switch experience preferably. If you have this experience plus the ability to lead a small team phone NDW! Co offers

- Regular salary reviews
- Free BUPA
- Sports and social club
- Subsidised staff restaurant and luncheon vouchers

Regular salary reviews

REF 1959

PROJECT LEADER

LONDON

With turnover of £2m our client, a major group of companies has business interests in the UK and overseas specialising in the provision of a wide range of products and services to various industries. Requirements: PDP man, the ideal person with a good programming background and at least 12 months as a project leader with one project handled from design to completion. This is a responsible position for someone who wants to enhance their career development. Co offers:

- Opportunities for promotion to manage with a company car
- Working on a wide range of applications including micros, minis and mainframes

REF 1967

ANALYST PROGRAMMER

LONDON

Management can bring you the ability to make practical contributions to business development of our international message switch systems using MACRO ASSEMBLER RS-II and RTI. Ideal applicants should have 5 years experience in Real Time Programming using MACRO ASSEMBLER and RSX with message switch experience preferably. If you have this experience plus the ability to lead a small team phone NDW! Co offers

- Regular salary reviews
- Excellent career prospects
- Easy access from south - close to major rail station

REF 1968

SYSTEMS ANALYSTS

SURREY

Management can bring you the ability to make practical contributions to business development of our international message switch systems using MACRO ASSEMBLER RS-II and RTI. Ideal applicants should have 5 years experience in Real Time Programming using MACRO ASSEMBLER and RSX with message switch experience preferably. If you have this experience plus the ability to lead a small team phone NDW! Co offers

- Regular salary reviews
- Excellent career prospects
- Easy access from south - close to major rail station

REF 2008

TEAM LEADER

CITY

Unique opportunity exists within the multi-national communications conglomerate retaining large PDP units. Company is currently engaged in the development of our international message switch systems using MACRO ASSEMBLER RS-II and RTI. Ideal applicants should have 5 years experience in Real Time Programming using MACRO ASSEMBLER and RSX with message switch experience preferably. If you have this experience plus the ability to lead a small team phone NDW! Co offers

- Update technology
- Regular salary reviews
- Excellent career prospects

REF 2008

SENIOR PROGRAMMER

CITY

Due to expansion this multi-national bank has an opening for a programmer with a minimum of 3 years ASSEMBLER experience to work on IBM 370 which runs under DDS/VSE. This is a very varied position which involves many new and interesting projects relating to internal bank financials. If you have the right experience and strong will to succeed then apply NDW! Co offers:

- Subsidised Mortgage Loan Scheme
- Job Bonus
- Non contributory pension scheme
- Excellent prospects for promotion

REF 1968

SENIOR PROGRAMMER

MIDDX

Our client is a major pre-press organisation providing services to the British banking industry. They retain a large IBM 3081 250Mhz computer and currently developing a major on-line communication system. Applicants should have at least 3 years COBOL experience in IBM hardware. The super opportunity to follow in their path, there are exciting delivery of 3033 in March and lots of new development work is planned. Co offers:

- Flat rate
- Competitive development and well-planned schedule
- Progressive organisation
- Plenty of room for growth and assistance
- Training potential

REF 1969

PROGRAMMER

N. LONDON

Major manufacturing company has set up new installation in Buckinghamshire and seeks systems analysts to be responsible for various project teams. Hardware required is IBM 3081 250Mhz computer and the other installations. This is an excellent opportunity to get involved at the beginning with fantastic career prospects. Co offers:

- MORTGAGE SUBSIDY
- Relocation expenses
- Non contributory pension scheme
- Personal Loan Scheme

REF 1968

SYSTEMS ANALYSTS

BUCKS

Major manufacturing company has set up new installation in Buckinghamshire and seeks systems analysts to be responsible for various project teams. Hardware required is IBM 3081 250Mhz computer and the other installations. This is an excellent opportunity to get involved at the beginning with fantastic career prospects. Co offers:

- RELOCATION
- 5 weeks holiday
- Non contributory pension scheme
- Excellent career prospects

REF 1969

SENIOR PROGRAMMER

CITY

Our client, a major American company engaged in the production and marketing of electronic equipment, is seeking a programmer who has at least 2 years COBOL experience. They retain 1081 system 3 at present but will consider ICL RPGII experience. Ideal applicant is someone prepared to work in a small team, prepared to write programs but also get involved in systems analysis and the general running of the installation. Co offers:

- COMPANY CAR
- Bonus
- Friendly and lively atmosphere

REF 1971

JPSL inc Ltd

DON'T JUST SIT THERE

If you want a well paid job with variety, customer contact and excellent prospects then please get in touch with us.

We are particularly looking for programmer/analysts with a minimum of three years commercial DP experience including COBOL.

You can expect a starting salary in the £6K to £8K range (plus excellent benefits) depending upon experience. We would expect you to develop rapidly and be earning £20K+ in five years time.

If you don't already live in London we do provide relocation assistance.

This is your opportunity to start a professional career with one of Europe's leading computer service companies.

Please write or telephone for more details - you will not be wasting either your time or ours. If you prefer to call me in the evening or at the weekend you may do so on Haywards Heath (0444) 53100

Brian Walters
Managing Director
CMG (West End) Ltd
Sunray House
Bedford Park
Croydon CR0 2AP
Tel: 01-686 8251
Ref.: W/4

*Have a prosperous
New Year with CMG*

GEORGE II OPERATORS move to ICL 2960's

in West London
c. £4,300

One of the major UK breweries have recently ordered two ICL 2960's. These will be installed early next year and will replace the current hardware of two ICL 1903T's running under GEORGE 2S.

As one would expect from a major brewery conditions of employment are first class and include:

- ★ start salary of c. £4,300
- ★ excellent restaurant
- ★ ample car parking
- ★ first class career opportunities
- ★ FREE BEER of course!

Three operators with upwards of one year's operating experience on ICL 1900 mainframes, running under GEORGE 2, are required to complete the existing operations team. Three shifts are worked and with the arrival of the 2960's in the near future, prospects for career advancement are excellent.

For further information (including a data sheet describing our clients installation) contact our CROYDON office quoting ref: CW 53-9S.

COMPUTER AND PROFESSIONAL PERSONNEL CONSULTANTS **CAPP ASSOCIATES** Computing Services Association

19 PARK STREET, CROYDON CR9 1TN 01 686 9693

D.P. Manager

North East Kent, to £8,000

A major British company involved in the important field of transmission and distribution of electrical energy requires a manager to assume full control of the DP installation at its N.E. Kent manufacturing site. The key priorities of this new appointment are reviewing all current applications, personal involvement in the development of new systems and advising on updating of

E. Sutton, Ref: 17047/CW.

Male or female candidates should telephone in confidence for a Personal History Form to:
LONDON: 01-734 6852, Sutherland House, 5/6 Argyll Street, W1E 6EZ.

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We specialise in D.P. recruitment in the Herts/N. London area and the following vacancies are a selection from our current register.

STANMORE	S.A. £6500 + non-contributory pension.
HEMEL HEMPSTEAD	IBM Cobol Prog. 12/18 months' exp. Small department. £5000.
HARROW	S.S.A. Normal commercial experience. £7000/£8000. Anal./Prog. £6000+.
EOGWARE	S.S.A. up to £6500. Sen. Prog. IBM or Univac, up to £6500. Operators. IBM or Univac, up to £4500.
WATFORD	Sen. Progs. Any Cobol 3/4 years. c. £5000+.
LUTON	Syst. Prog. PL/1 and Assembler. £7000/£7500. Anal. Prog. PL/1 or IBM Cobol. c. £6000. Sen. Prog. PL/1 or IBM Cobol. £6500/£8000. Jun. Prog. 6 months' PL/1 or IBM Cobol.
POTTERS BAR	Prog. or Prog. Anal. min. 1 year any Cobol. up to £5500.
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MARYLEBONE	S.A., 2 yrs. IBM background for financial projects. £7000/£8000.

For more information ring:

HAYMARKET COMPUTING LTD.

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OPERATIONS CONTROLLER SHIFT LEADER FOR 2.75 Mb 2960

Applications for the post of Shift Leader are invited from experience of using GEORGE 2, 3 or 4, 5 in relation to approximately £5150-£6500 plus of two staff allowances.

Prospective Operations Controller should be highly motivated computer professionals with a minimum of 3 years' experience in VME/B experience, management potential and be good communicator who has extensive practical in the approach to problem solving. Salary £5500 to £6000+ cluded.

Both these positions offer good career prospects including in-house and external training courses and carry a number of good company bonuses.

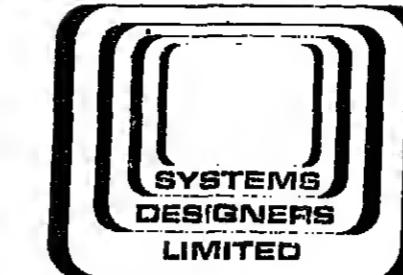
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Further details and an application form can be obtained from the Principal, Tresham College, Kettering Centre, St. Mary's Road, Kettering. Telephone Kettering 05363.



Programmers & systems engineers in Manchester: up to £6,500

Systems Designers Limited is an independent British systems consultancy, backed by the NEB, and with an unrivalled reputation in mini and micro computer applications. Established in 1968 and currently 150 strong, the company is expanding its operations in both the UK and abroad. A full order book and continued demands for our high quality services have produced no minimum requirements for a number of professional programmers and systems engineers for our Manchester office.

Current projects are challenging and rewarding and the company policy of full participation of all members offers broad prospects and opportunities for rapid progress for top people.

Requirements exist for people with broad experience in the design and implementation of mini and micro computer systems using both assembler and high level languages. We are interested in hearing from programmers and engineers with at least two years' experience. Applicants must have good academic qualifications and a proven software ability, together with a professional outlook.

Please write or telephone: Alice Bovell, Ell House, Woodstock Road, Altringham, Cheshire WA14 1HA. Telephone: (061) 328 9105



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Teleprocessing and Database Scandinavia + London

Salaries: c. £16K

candidates will have worked with IMS applications for two years or longer. Applications areas include on-line enquiry systems, banking, sales ordering, stock/inventory control budgeting and forecasting. The scope of projects and the prestige of working with this acclaimed Market Leader will be certain to appeal to the most demanding career minded individuals. The high salaries reflect the prominence which our Client places on the acquisition of these key personnel who are certain to rise rapidly to Consultancy or Management levels should the individual desire.

Systems Development (Pre and Post Sales) Central London & Thames Valley

Salary: to £10K + car

sales environment. The company offers an outstanding portfolio of company benefits including a minimum of 4 weeks holiday allowance, Group medical insurance and life assurance are already in operation whilst more senior staff are eligible for an annual bonus (currently assessed at 10% of salary). Full removal assistance is available where appropriate. Local interviews in Greater Manchester, Central London and Reading will be arranged to suit requirements.

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Salaries: to £15K

We have several outstanding permanent career vacancies for Scandinavia's foremost Hardware and Software Systems supplier. Particular machine experience is not essential but those who have an in-depth knowledge in message, tele switching and packet switching, data communications and protocol procedures will prove invaluable to the growth pattern this company wishes to achieve in 1979. Of special interest will be PROGRAMMERS and

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TRAVEL INDUSTRY

A highly personalised British company specialising in the development and provision of turnkey systems for the travel industry is expanding to new premises at Maidenhead, Berkshire and has several vacancies for professional staff.

PROJECT LEADERS SYSTEM DESIGNERS PROGRAMMERS

The Company has vacancies for three project leaders and six system designers /programmers to design and implement three major systems. Applicants should be experienced in the design and development of real time systems. Project leaders should in addition have demonstrated an ability to define and document programming requirements for more junior staff. Experience of PDP 11 software or CORAL 66 would be an advantage. Salaries of up to £7000 plus usual benefits are offered for these posts.

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The Company has vacancies for three engineers to help to set up and lead system commissioning and field service teams. Applicants should have appropriate computer or electronic engineering qualifications and at least five years experience of management for these functions for mini-processor and computer terminal systems. Salaries of up to £6500 plus usual benefits are offered for these posts.

For further details of the Company, job specifications and application forms please telephone 0494 39186.

Small Business Systems London and Home Counties

Salaries: £5K-£8K (+ bonus)

A multi-national Manufacturing and Package Development Company decentralised throughout London and the Home Counties (both South and North of Thames) is seeking additional Programmers and Systems Analysts in both pre and post sales capacities who will be engaged in the development of a variety of new commercial applications. Suitable applicants are likely to have worked already for a V.R.C. supplier, Mini or Micro Manufacturer or in an O.E.M. environment. Naturally good programming performance will be most important and these candidates with knowledge of either Basic or Business Assembler will be of particular value reflected in the above market salaries you will be offered.

Additional fringe benefits include a non-contributory pension scheme, sickness and medical benefits, life assurance entitlements, project performance bonus and a minimum of 20 working days holiday.

Interviews throughout January and February will be held at the branch office most convenient to individual candidates.

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£10 - £13K + Benefits.

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c £7,000

We are a small but expanding electronics company with considerable expertise in microprocessor applications. Due to our increasing involvement in microprocessor applications we need an experienced software engineer to strengthen our design team.

We will be responsible for the design, writing and testing of software for our systems, liaison with our hardware engineers and commercial staff in the definition, development and installation of the systems, and ongoing product support.

Applicants should be aged 25-35, self-motivated, disciplined, with wide experience of system design and programming at all levels. Knowledge of logic design and computer architecture is also required. Experience of user interface would be an advantage.

Applications to Mr. G. Stratton,
Sighthill Designs (Electronics) Ltd
Unit 17,
Clydebank Training Estate,
East Kilbride Road,
Holmwood Green,
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**STEVENAGE COLLEGE
DEPARTMENT OF BUSINESS AND
PROFESSIONAL STUDIES**

**LECTURER GRADE II
in COMPUTER STUDIES**

With experience in Bookkeeping and Accounting Systems

Applicants are invited from suitably qualified persons for the above post which is tenable from 1st February 1979.

Further details and application forms, returnable within 14 days of the appearance of this advertisement, are available from the Principal Stevenage College, Muckswood Way, Stevenage, Herts SG1 1LA

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Application forms and further particulars are available from The Recruitment Office (MS234/1), The Open University, P.O. Box 75, Walton Hall, Milton Keynes MK7 6AL, or telephone Milton Keynes 63406; there is a 24-hour answering service on 63866.

Closing date for applications 31st January, 1979.

★ IBM COBOL PROGRAMMER ★

Permanent or contract from Feb./Mar. to work in project team developing financial systems on an IBM 370 for a North of London client.

Expenses and opportunities for team database techniques.

Contact Ian Gold, on 01-388 0036, 38 Warren Street, London W1P 5PD.

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Croydon

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In our friendly, well integrated Systems Division we are working on exciting database developments for management information, CICS, word processing and other systems. The mainframe, at present a large IBM 370, will be connected to a network of specialised miniterminals initially 3790's upgrading to 8100's.

We will train you to the high standard required for your future involvement with MVS, TSO, teleprocessing and distributed processing hardware. You could be writing COBOL within six weeks, and work on a project right from the start. Our training makes use of Improved Programming Techniques.

Promotion prospects for men and women within this dynamic and progressive organisation are extremely favourable. Benefits include exceptional salaries, non-contributory pension scheme, free life assurance, BUPA, illaxima, LVE and sports and social club. For an application form phone or write to:

Rosalind Sykes, Personnel Department,
Lowndes Lambert Group Ltd,
PO Box 431, 33 Eastcheap, London EC3P 3HL.
Tel: 01-283 200 Extension 3105.

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£6,500**

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The major development phase, commencing with an integrated Production Control System, promises SUBSTANTIAL CAREER OPPORTUNITIES to the computer professionals involved at this stage.

Your background should comprise sound COBOL programming experience with some Analysis and Design, ideally in an on-line environment.

As the leader of the programming team

you will be responsible for the successful implementation of the total development phase and will report directly to the D.P. Manager.

They see the challenge as being attractive to a self-motivated individual, possessing good communication and his fair share of energy. We also feel that you will find your working environment - set near the Thames particularly pleasant.

Please write in confidence with a brief career history and personal details to:

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D. Harden,
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indicating the names of any companies to whom you do not wish your applications to be forwarded.

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ANALYST/PROGRAMMERS
TO £8,500 + BONUS

We are a young, expanding Computer systems house with a solid client base, involved in micro/multiprocessor based automation/control systems.

We are establishing project teams and require analyst/programmers with the following qualifications:

- * 3 years programming experience, including assembler language
- * Ability to learn quickly
- * Problem solving capability
- * Professional outlook and ability to communicate

We offer rapid career development with regular salary reviews, staff pension and insurance schemes, together with all the usual company benefits.

CALL OR WRITE TODAY: John Archibald, SERVELEC COMPUTER SYSTEMS LTD., Churchill House, 100 Bedford Road, Old Trafford, Manchester M16 0PD. Telephone (061) 672 0859 or 651416 (evenings).

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All classified copy should reach our offices no later than 5.30 p.m. on the Monday preceding Thursday's publication. If complete artwork is supplied 12 noon on a Tuesday.

Ring David Abbey for further details on 01-261 8016.

JBA

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A leading banking organisation wish to appoint a senior analyst in their computer division to provide a detailed technical service to the central board. The work will be highly varied but principally concerned with the evaluation of hardware and software for communications systems, both large and small networks, supporting a wide range of peripherals.

Candidates should be qualified to degree level and have an impressive track record in the d.p. industry to a point beyond conventional systems analysis. The ideal candidate will have sound experience in at least three of the following: systems/operational software design; real time/database techniques; data communications and security systems; mini/micro computer hardware/software; peripheral product/prototype development; hardware sizing and configuration.

The appointee will enjoy high remuneration, non-contributory pension scheme, free life assurance, and house mortgage subsidy in addition to generous relocation expenses where necessary.

Contact: Mike Creamer

JAMES BAKER ASSOCIATES

International Personnel Consultants,

16 Maddox Street, London W1. Telephone: 01-491 4478.

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COMMERCIAL SYSTEMS PROGRAMMERS DM 46K - DM 60K

RESPONSIBILITIES	— To develop a range of Commercial Systems Applications on advanced real time equipment — taking total responsibility for launching the systems into the international market place.
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SALARY	— By negotiation and according to experience — circa DM46K to DM60K.
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ADDITIONAL BENEFITS	— House-move assistance — German language training — Family education facilities — Medical Insurance.
CAREER BENEFITS	— The Company is international, profitable and expanding — Job interest is of prime importance to them, career development can be rapid and if required in other countries where they have subsidiaries.
ACTION	They will want to hire self sufficient and ambitious computer professionals who wish to take project responsibility. They will look for individuals whose skills in programming and systems are current and who are looking for a move to Europe that has real prospects.
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- * Gain IBM experience on a 370/158 under MVS.
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- * Be responsible for design.
- * Develop team leading skills.
- * Receive training in database design, using IMS.
- * Work with on-line real-time applications.

with a Company offering:

- * Excellent starting salary.
- * Five weeks' holiday.
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- * An active sports and social club.

This Engineering Company, situated 20 miles from London, offers an excellent career as a member of a professional systems and programming team currently developing a wider variety of applications to meet the system requirements of the business well into the 80s.

Ref. E2/0401

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A 5% subsidised mortgage scheme and relocation expenses are offered to successful applicants. Our client requires Project Managers to run teams of Programmers and Analysts, an IBM 370 and COBOL background with management experience is essential. Ref. 1037

UNIVAC PROGRAMMERS NORTH WEST c £5,166

This company offers to employees a house purchase scheme and Flexitime. They are a large Merchant Bank with installations throughout the U.K. and require Programmers with UNIVAC experience. Ref. 1026

FOR DETAILS OF THESE AND OTHER VACANCIES PLEASE CONTACT JOAN JOHNSTONE
143/144 ROYAL EXCHANGE, MANCHESTER. TELEPHONE NO. 061-833 9341/5

ANALYST PROGRAMMERS LANCS. c £6,000

This Company is rapidly expanding so there are great promotion prospects for a career minded person. There are current vacancies in Pensions, Accounts and in the Computer Centre. IBM 370/16B and E.D.P. experience is an advantage. Relevant experience also include C.I.C.S and TOTAL. Ref. 1003

TECHNICAL ANALYST SHEFFIELD c £6,000

A Company can offer added bonus with this position. The company has 75 D.E.C. 11's and is moving into Telecommunications. It is a small young team and there is a variety of work. Knowledge and experience of P.O.P. design, mini computer and telecommunications is an advantage. Ref. 1039

SENIOR SYSTEMS ANALYSTS NORTH WEST c £6,000

This Company are to undertake a major conversion from ICL 1902 to an IBM 370. A team of alert capable Analysts are required for the conversion. Experience in the above hardware is a definite advantage. Ref. 1009

RSX-11M
MACRO II, FORTRAN
£5.5-8K + Car

ATTENTION — SENIOR OPERATORS wishing to step into DP MANAGEMENT

DP MANAGER

c. £4,500

The Lincolnshire Standard Group Ltd., Lincolnshire's leading weekly newspaper group require someone to take responsibility for their DEC 11/34 real-time system reporting to the Management Systems Manager of the Group.

The successful applicant will be expected to liaise with the software house development turnkey systems; supervise their successful installation, and ensure the efficient daily running of these and existing systems.

At present the system covers the Accounts and Newspaper Circulation functions. Future developments include Advertising Order Entry and, possibly later, Newspaper Production.

The job should appeal to senior operators or those of similar calibre, who are ready to take the first step on the management ladder. An enthusiasm for programming, with a view to carrying out minor modifications, would be desirable.

The installation is in the early stages of development, and there is scope for an ambitious person to develop along with it.

The Group's offices are situated centrally in the attractive city of Lincoln, where commuting could be a ten-minute walk.

The usual benefits associated with a major company are offered.

BBC COMPUTER SERVICES

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PROGRAMMER

to support IDMS on ICL 2960s

The installation includes 2 ICL 2960s running under VME/B, supporting TP, MAC, distributed processing and IDMS database.

We now seek someone with experience of database implementation (not necessarily under IDMS) to join the Technical Support team.

He/she will assist us in supporting IDMS users of BBC computers, by consultancy, project participation and training, implementing, testing and maintenance of database software and development of new facilities.

The Technical Support Unit is located at the BBC Computer Centre in West London.

The salary will be in the range £5,200-£6,800 (currently under review).

Please apply for an application form enclosing addressed envelope and quoting reference

number 1866/CW to Appointments Department, BBC, London W1 1AA, telephone number 01-580 4468 ext. 4618.



AUCKLAND NEW ZEALAND

APPLICATIONS ANALYSTS PROGRAMMER ANALYSTS

104PB is an independent bureau specialising in insurance broking and manufacturing distribution. Founded in 1970 as the data processing arm of the New Zealand Insurance Group, it is now one of New Zealand's most respected data processing organisations. IDMS expertise is particularly important to those people seeking entry into the specialist area and firmly in their policy of keeping the forefront of information technology.

The company comprises an IBM 370/148 in Auckland and a 370/138 in Wellington. A communications network links the computers to 18 centres throughout New Zealand. Their main programming language is COBOL.

They require a number of applications analysts and programmers and their Auckland centre. A background having IBM equipment and expertise is an essential requirement. Candidates will be ideally in the 23 to 35 age group and will wish to settle in New Zealand.

Your rewards, as may be expected from a successful people company, will be a fully competitive New Zealand salary (£5,100 to £8,000 per annum, review after 6 months plus excellent fringe benefits). These, plus continual assistance with relocation, will be detailed at your interview.

For further information in recruitment for New Zealand and/or the rest of the world, contact Mr. G. J. Morris, Director of Personnel, 104PB, 104 Pitt Street, Auckland 1, New Zealand. Tel. 09-242 2162 or if you prefer, write to him at our office in London.

Prescot Computers Limited
9 Bloomsbury Square
London WC1A 2TP
Tel. 01-242 2142

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Write for an application form to:
Mrs. A. Freeman
Lincolnshire Standard Group Ltd.
Witham House
Pilham Bridge
Lincoln LN5 8XE
or phone Lincoln 31631

ROYAL SOCIETY OF ARTS EXAMINATION BOARD ASSISTANT SECRETARY

Applications are invited for this post which will be based at the Board's Orpington office and will be concerned with the development and administration of systems for the Board's examinations. Candidates should possess a degree or a similar qualification and should have experience in at least two of the following areas: administration of examinations; development of systems; application of computer processing to administration; application of statistics to education. Salary £5890 x 235 (5)-£7065.

Application forms and further details concerning this post may be obtained from the Secretary to the Examinations Board, Royal Society of Arts Examination Board, 18 Adam Street, Adelphi, London WC2N 6AJ, to whom completed application forms should be returned by 31st January, 1979.

In the supply of computer-aided despatch systems, both in the UK and overseas. For example, systems are in operation with police forces in this country handling police incidents and aiding resource allocation on a fully real-time basis. IAL is also currently working on a major project for a Canadian city where all three emergency services — fire, ambulance and police — are being totally integrated. Further projects of a similar scale and nature are currently under consideration in a number of locations world-wide.

This background means we can offer something more than the usual day-to-day routine for Analysts/Programmers with real-time experience, covering two or more of the following aspects:

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- *FORTRAN
- *CORAL
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- *Multi-tasking operating systems

You will be working at IAL's well-equipped headquarters conveniently situated near Heathrow Airport and there is a possibility of occasional overseas travel to meet the customers. The salary is around £7,000, dependent on experience, the benefits good and relocation expenses will be considered.

TIRED OF THE DATA-DAY ROUTINE?

If you would like a break from the usual routine, please write with cv or telephone The Recruitment Officer, IAL, Aerodra House, Hoyes Road, Southall, Middlesex quoting ref. 001K. Tel: 01-574 5134.

Applications are welcome from both men and women.

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REAL - TIME

SYS. 3/32 + PDP-11
C. Language £6-8K

A major Public Company in Retail and Manufacturing sector has recently upgraded their ICL 1900 to a New-Range system and now require additional COBOL Programmers to develop new systems and assist in the conversion of the 1900 based suites. Programmers and Analysts up to and beyond Team-leader level are sought. The salaries will be above regional average and based on prior experience and potential. Good opportunities exist for promotion and career development. Additional experience in retail systems would be useful. Assistance with relocation will be considered along with impact on initial fringe benefits. The working environment is excellent. Interviews will be held any time during January.

A practice U.S. Software House has immediate vacancies in their London office. Programmers with any of the following experience: (1) RPG II, RSX-11M, COBOL II, with ICL II, CORAL, AEGOL or Pascal - Real-Time Systems Programming. (2) Macro II on PDP II. Financially oriented background is preferred. Opportunity to travel available to any who enjoy the freedom and autonomy of overseas assignments. This identifies above averages suitable to individuals who can demonstrate ability and a creative approach to Commercial Data Processing. Relocation expenses will be paid where appropriate and interviews will be held as soon as applicants are received.

MATRIX

360 Oxford Street
London W1N 9HA
01-491 4636

C&L

DP Consultancy People & Computers

Computer professionals build their early career in a technical world where the emphasis is on the computer. If computer systems are to work, however, it is the people who use those systems who are important.

Consultancy offers a career path to experienced computer professionals which will lead on to a wide variety of opportunities. Specialised skills and experience could be an advantage but is not a pre-requisite. Salaries will be in accordance to previous experience but credit will be given for potential. A substantial package is available in addition to a range of other benefits. This total package is in our opinion very attractive.

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Coopers & Lybrand Associates Ltd.
Management Consultants,
Shelley House, Noble Street, London, EC2V 7EO

THE UNIVERSITY OF MANCHESTER REGIONAL COMPUTER CENTRE

Director: Professor Gordon Black

Applications are invited for the following vacancies

SENIOR PROGRAMMER OR PROGRAMMER

The successful applicant will lead a team responsible for the development and support of the ODECO 3 Operating System on ICL 1900. ICL 1904 and ICL 1905 (PDP-11, COBOL, AEGOL or Pascal - Real-Time Systems Programming). (3) Macro II on PDP II. Financially oriented background is preferred. Opportunity to travel available to any who enjoy the freedom and autonomy of overseas assignments.

Applicants should be educated to degree standard and should have some experience of systems programming. Experience with ICL Systems would be an advantage. Application will be made in either grade 1A or 1B depending upon the experience of the candidate. Ref. 270/78/CP/1979.

Salary: £3,250-£6,500 p.a. or £5,100-£7,700 p.a.

TWO ASSISTANT COMPUTER OFFICERS

The post will involve the development and support of the ODECO 3 Operating System on ICL 1900. ICL 1904 and ICL 1905 (PDP-11, COBOL, AEGOL or Pascal - Real-Time Systems Programming). (3) Macro II on PDP II. Financially oriented background is preferred. Opportunity to travel available to any who enjoy the freedom and autonomy of overseas assignments.

Applicants should be educated to degree standard and should have some experience of systems programming. Experience with ICL Systems would be an advantage. Application will be made in either grade 1A or 1B depending upon the experience of the candidate. Ref. 270/78/CP/1979.

Salary: £3,250-£6,500 p.a. or £5,100-£7,700 p.a.

SENIOR COMPUTER PROGRAMMER

The post will involve the development and support of the ODECO 3 Operating System on ICL 1900. ICL 1904 and ICL 1905 (PDP-11, COBOL, AEGOL or Pascal - Real-Time Systems Programming). (3) Macro II on PDP II. Financially oriented background is preferred. Opportunity to travel available to any who enjoy the freedom and autonomy of overseas assignments.

Applicants should be educated to degree standard and should have some experience of systems programming. Experience with ICL Systems would be an advantage. Application will be made in either grade 1A or 1B depending upon the experience of the candidate. Ref. 270/78/CP/1979.

Salary: £3,250-£6,500 p.a. or £5,100-£7,700 p.a.

Is this the high point in your programming day?



Ever get the feeling you're using your 10MB brain to handle a programming job that only needs a few KB of intelligence and initiative?

Don't worry - you're not alone.

Plenty of good programmers are in jobs that have about as much real challenge and interest as a junior crossword puzzle. Only you're luckier than they are. You're about to discover a way out.

If you're anything more than just another commercial programmer, and particularly if you're interested in things mechanical, we could take you out of the humdrum world of programming, and start you in a career in software engineering.

You'd develop real-time software that forms the heart of some of the world's most advanced electronic systems, like airborne radar, surveillance networks and sonar. You wouldn't just work closely with systems users, you'd be part of the team developing a whole system from scratch. You'd work in CORAL (don't worry if it's a foreign language to you at the moment) and you'd work to the highest levels of integrity.

Frankly, if you don't find our kind of work exciting and rewarding, there's very little we can suggest.

Except perhaps hang gliding blindfold over a swamp full of alligators.

To find out more about the excitement of software engineering with Marconi Avionics at Borehamwood, phone Peter Chinn, the Manager of our Airborne Software Division, on 01-953 2030, extension 3289. Alternatively, write with brief details of your programming experience to H.E. Batchelder, Marconi Avionics Limited, Elstree Way, Borehamwood, Herts. Quote ref: MEAS 79002

MARCONI AVIONICS

A GEC-Marconi Electronics Company

CLASSIFIED COPY

All classified copy should reach our offices no later than 5.30 p.m. on the Monday preceding Thursday's publication. If complete artwork is supplied 12 noon on a Tuesday.

Ring David Abbey for further details on 01-281 8015.

data scene

CONTRACTS

FREELANCE PROGRAMMERS

register now for immediate and forthcoming requirements throughout

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If you have 3 years in D.P.
If you want a top contract
If you want a top rate

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Data scene Recruitment Limited
Suite 101, 173 Regent Street
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01-439 1856
24-hour answer phone

Development Analysts

— up to £6,300

Johnson & Johnson Limited, leaders in the field of Health Care products, are seeking a Development Analyst and a Senior Development Analyst reporting to the Systems and Programming Manager.

In both cases the work is concerned with long term business systems analysis in both commercial and financial applications. The prime objectives will be to assess business problems, especially in critical areas of the company's operation, and to provide solutions in the form of proposals for the development and installation of computer based systems. For the senior position, two years' experience — including the implementation of a major system — is vital.

For both positions some travel to our manufacturing plants in Yorkshire and Portsmouth will be required.

Our present installation is an IBM 370/160. The major programming language is PL/I with CICS and DL/I being implemented.

Benefits, including the advantages of Flextime, etc., those you would expect from a large, successful company. Relocation expenses will be paid where appropriate.

If you are interested in either position, please telephone for an application form to: Susan Turner, Johnson & Johnson Limited, 260 Beth Road, Slough, Berks. Tel: Slough 31234 Extn. 446.

Johnson & Johnson

J&J, inc. J&J

NERC CENTRAL COMPUTING GROUP COMPUTER SCIENTISTS

SCIENTIFIC OFFICERS/HIGHER SCIENTIFIC OFFICERS

Two computer scientists are required to join a small team of analysts and programmers situated at the Rutherford Laboratory, Oxford. An important aspect of the work is the maintenance and further development of G-EXEC, a generalised relational data base management system developed in NERC.

Post 1 will involve giving advice on data handling techniques and assistance to NERC institutes and outside organisations and there will be considerable travelling abroad and in the UK.

Post 2 will be concerned with the software development programme at the Group, particularly in areas such as graphics, and with advising and assisting users of the major computing facilities supported by the Group.

Qualifications/Experience:
Candidates should possess a degree, HNC or equivalent and for post 1 previous experience in implementing major software systems on different computers would be desirable. For post 2 previous experience in FORTRAN programming would be an advantage.

Salary/Conditions of Service:
The appointment will be to the Scientific Officer or Higher Scientific Officer grade, according to age, qualifications and experience. The salary will be within the following scales:
Scientific Officer with 20 days paid annual leave, £2839-£4415;
Higher Scientific Officer with 20 days paid annual leave, £4101-£5448.

There is a non-contributory superannuation scheme. The Natural Environment Research Council is not a Government Department but conditions of service are similar to those of the Civil Service.

The Rutherford Laboratory is situated within pleasant rural surroundings on the outskirts of Oxford and has its own restaurant and recreation facilities. Oxon. Rail services from most neighbouring towns and villages to London, and there are shops, banks, sports and social clubs at the adjoining AERE Harwell site.

Application forms and further details are available from:

Mrs J. Evans,
NERC,
Peter House,
North Star Avenue,
SWINDON, Wilts.

quoting reference No.: E2/01/178.

Closing date for completed applications is: 25 January 1979.

NATIONAL ENVIRONMENTAL RESEARCH COUNCIL

BORDERS REGIONAL COUNCIL
**1. SYSTEMS ANALYST
2. SENIOR PROGRAMMER**
ES2S8-EB754 plus £312 supplement
For the Computer Section of the Finance Department, based at Newton St. Boswells.

1. Applicants with proven experience of major systems probably in a Local Government environment. Knowledge of teleprocessing would be an advantage.
2. Duties will include full responsibility for systems programming on a 192K IBM 370/115(2) using OS/VS and VANO/LI. Future expansion will include teleprocessing.

A good working knowledge of COBOL and Assembler is essential along with experience at POWER/VS and VANO/LI.

Closing date Monday 15 January 1979

Application Forms and further particulars may be obtained from the Personnel Department, Regional Headquarters, Newton St. Boswells TD8 0SA.

UNIVERSITY COLLEGE HOSPITAL COMPUTER OPERATOR

UNIVERSITY OF LEICESTER COMPUTER OPERATOR

There is a vacancy in the Clinical Pathology Department for a Computer Operator to work on the development of an on-line laboratory Computer System which is undergoing further development.

The system is based on a Modular 1 computer with disc backing store and minicomputer interface. The job offers considerable responsibility and the successful applicant will be expected to be able to work to strict schedules and to take responsibility for the smooth operation of the system.

Applicants should preferably have experience of computer operating, in a real-time environment.

Rate of pay £11 hour (week) within ranges £3.21-£4.09 inclusive of London Weighting.

Application forms and further information can be obtained from the Personnel Department, University College Hospital, Gower Street, London EC1A 8AT. Tel: 01-387 9300 Ext 381 quoting ref: CW/JCD/BP.

Closing date 15th January 1979.

SALES EXECUTIVES

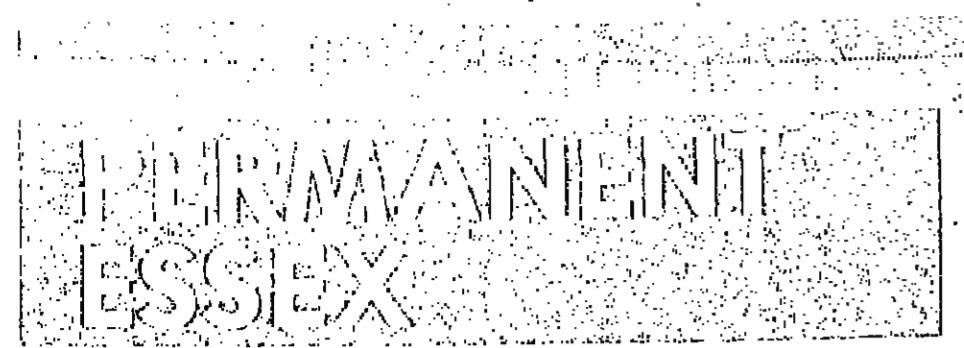
(Major Mini Manufacturer)

Not only GENEKIC CAR

but also Excellent Product To Sell

Supplied Corporate Workforce

Non Profit Information



Systems Analysts

Our Client, currently developing Real-Time MIS systems, is looking for good Analysts to help enhance their current developments using a cluster of Univac kit. Should you wish to enlarge your experience with on-line Real-Time experience, please do not hesitate to phone.

c £6.5

IC419

Senior Analysts

A large manufacturing and wholesale Company is seeking persons with sound analysis experience to develop and enhance the business. Backed by a large IBM configuration, these opportunities provide you with an excellent chance of furthering your career immediately. For further details phone now!

c. £7k

IC419

Analyst/Programmers

If you are seeking variety, a dynamic working environment, fast career progress and good technical training based on IBM mainframes this opportunity may be of interest to you. Our client runs a Real-Time network located in a rural setting, where living costs are well below the average for the S.E. No matter what your programming or analytical experience a 'phone call could change your whole lifestyle' — for the better!

c. £6.5k

IC419

Analyst/Programmers

If you are good at RPG2, are familiar with any machine in the IBM System 3 range and you have flair for commercial analysis and design then do not hesitate to contact us now! Located in a very pleasant country village our Client offers a good career path and excellent opportunities.

c £5.5

IC419

Assembler Programmer

c £6.5k

This is an excellent opportunity for an ex-Systems Programmer, or a very competent assembler programmer to help develop an On-Line Real-Time system. The kit is IBM mainframe and the application will involve production control suites and some process control. Our Client is a large manufacturer and offers numerous company benefits. Please phone now for details.

IC419

Systems Programmer

Our Client, a large multinational Company, operating an IBM 370 machine under OS-VS is looking for a really good 'practitioner', if you are keen to learn, eager to progress and have the ability to really make things 'tick' then do not hesitate, phone now for a quick assessment of your chances.

c £7k

IC419

Analyst Programmers

If you have at least two years' experience in either Cobol, Assembler or PL/I and you wish to progress rapidly into either Analysis, Project Management or Software development then our Client would be very interested in talking to you now. Numerous large company benefits are offered with these interesting positions.

c £6k

IC419

Programmers

c £4.5k

IC419

Our Client is currently running an ICL 1900 kit but is shortly to purchase powerful ICL 2900 series machines to increase business. So, if you have only 18 months' COBOL experience, preferably on ICL kit, and like working in excellent surroundings which will be supplemented by the usual perks one comes to expect from a leading Bank, then pick up the phone and find out more now!

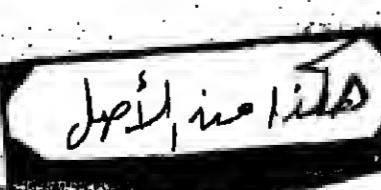
Telephone — John McLean for an up-to-date list of current opportunities on —

BRENTWOOD (0277) 212021

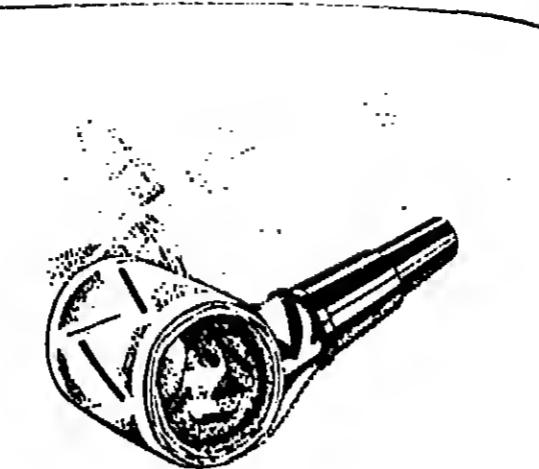
or write to him at:

LINSCOTT COMPUTER SYSTEMS LIMITED
P.O. Box 74, Brentwood, Essex CM15 0BZ
Licence No. SE(A)3007

LINSCOTT
Computer Systems Limited



Job in kits



ONE
WISH YOU A HAPPY
AND PROSPEROUS NEW YEAR

If you don't expect it to be happy or prosperous then make a resolution to come to our next open evening, later this month.

We are looking for experienced people at all levels to work on mainframe and mini-computer projects. We are also looking for still very good Sales Person to sell turnkey micro-terminal Data Processing.

Look at next week's advertisements of the date and venue for our open evenings if you prefer to make contact now; phone Brian or David on Chesham 02405 74141 (01-600 time).

Or write to:
Square One Computer Services Ltd.,
The Limes, 130 High Street, Beaconsfield, Bucks.

SR4222

Computer Professionals ...Move up to Northamptonshire

Why Northamptonshire? It's a great place to live, for a start. It's a beautiful, rural county with good communications to all parts including the East Coast, and housing at reasonable prices. We'll help with relocation costs and there is also good rental accommodation available.

In addition to this our Computing Section of the County Council is expanding: the current 1900s will be replaced by a 2 megabyte dual 2600 in 1980 — and our current on-line service to many District Councils will be expanded to cover all the VME/B operating systems.

So there's plenty of work to go round — and there will be opportunities for promotion in the future. To fulfil our requirements we now need the following men or women:

We've got a lot going for you! Northamptonshire: find out more by phoning Brian Norton, our Computer Manager, 3483 ext. 5129.

Application forms are available from: County Offices, County Hall, George Street, Northampton, Tel: Northampton 3400 ext. 5235 or 5111. These should be returned by Friday 19th January 1979.

Reporting to the Financial Controller, the Data Processing Manager will be responsible for all areas of Data Processing including systems and programming. The relative department will employ an IBM System 32 together with a 5230 data collection system.

The successful candidate will ideally have proven Analysis/Programming experience and now be looking towards D.P. management opportunities.

Applying details of age, experience and education in strict confidence, marked private and confidential to:

D. J. McDonagh, FCA, G.T.P. Ltd., Sandy Road, Gelwray, Ireland

Team Leaders

£3,927 - £5,021 p.a. — to lead a team of analysts and programmers on a variety of financial and non-financial applications. You'll need at least 3 years experience.

Senior Analyst/Programmers

£3,927 - £5,021 p.a. — ideally suited for Team Leaders and you'll need at least 5 years relevant experience.

Trainee Programmers

Up to £3,452 p.a. — ideally suited for trainees, but, if you've got 3A's, you're likely to hear about you.

We've got a lot going for you! Northamptonshire: find out more by phoning Brian Norton, our Computer Manager, 3483 ext. 5129.

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INTERESTING POSITION VACANT IN
GALWAY, IRELAND

As part of its major expansion plans

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Applying details of age, experience and education in strict confidence, marked private and confidential to:

CICS

LONDON & H. COUNTIES
SALARY: £6-7.5KPL/I &
COBOLHAMPSHIRE
SALARY: £6-8.5K**COMPUTER
ENGINEERS****£6,000 + COMPANY CAR**

U.K. subsidiary of progressive American company requires experienced Engineers to work a shift rota in a demanding environment.

The company, a leader in the field of Oil Exploration, is based in one of the nicest parts of Sussex.

Benefits include Pension Scheme, Life Insurance, Company Car and possibility of foreign travel as no's career develops.

For further details contact Ted Tinsley on East Grinstead 28111.

**MERTHYR TYDFIL BOROUGH COUNCIL
APPOINTMENT OF PRINCIPAL
ASSISTANT (COMPUTERS)****SALARY GRADE SO(1) £5,232 TO £6,588**

Applicants should have experience and competent programmes in PL/I and/or ICL/1800 for this post as well as Programming experience. The holder of this post would be the Computer Manager. Applicants should have experience of GEORGE II operating system and potentially have previous experience of Terminus. A wide knowledge of ICL software will be considered an advantage.

**APPOINTMENT OF PROGRAMMER/
ANALYST (COMPUTER SECTION)****SALARY GRADE AP3 (£3,732 TO £4,146)**

Programmers with at least two years' experience in COBOL and/or PL/I are invited to apply for this post. Previous system analysis experience desirable.

The Council uses a 19011 Computer. Assistance will be given with buying recommendations and required removal expenses reimbursed. Commuting salary dependent on qualifications and experience.

Application forms and further particulars of these posts can be obtained from the Personnel Officer, 3 New Walk, Merthyr Tydfil Tel No Merthyr 15211 extn. 2181.

Closing date for applications - 24 January 1979

Town Hall
Merthyr Tydfil
Mid Glam.SELWYN JONES
CHIEF EXECUTIVE AND TOWN CLERK

**Southern Electricity
ENGINEERING COMPUTER APPLICATIONS**
SYSTEMS PROGRAMMER
Up to £7,200
PROGRAMMERS
Up to £5,500

Applications are invited for programmers to implement major systems now being designed to assist the Board's engineering activities. When fully operational the installation will consist of two ICL 2950 computers plus other hardware for communications and telecontrol. Terminal access to this system will be available from 30 remote sites. The systems at present being designed include inventory and maintenance control systems, circuit file and a telecontrol system to monitor and control the HV system.

Applicants for the Systems Programmer post should have a knowledge of ICL Operating Systems and preference will be given to candidates with either George 2 plus or VME experience. The installation will initially run under OME and George 2 plus and progressively transition to VME/K.

Applicants for the Programmer posts should be educated to at least 'A' level standard and have some programming experience in either COBOL or FORTRAN. Any necessary training will be given.

The post will be located at Head Office although some travel within the Board's area will be necessary.

We offer a challenging opportunity to be involved in the early stages of a project using ICL's newest computer, a good salary, plus pension scheme.

Application forms can be obtained from the Secretary, Southern Electricity Board, Southern Electricity House, Littlewick Green, Maidenhead, Berks. which must be completed and returned, quoting 98/78 by no later than January 23, 1979.

COMPUTER SERVICES MANAGER
c. £8,300

Benn Brothers Ltd. require a Manager for their new and developing in-house computer department, consisting of two new 84K Mini's each with remote on-line terminals, disk storage, providing Sales Accounting, Payroll and Management services to the group, the vacancy occurring due to the promotion of existing staff.

The job is based at Tonbridge, Kent, only five minutes' walk from the shopping centre and station, and offers an excellent modern custom-built environment.

Prospects and other benefits.

Applicants should ideally have had a minimum of three years' DP and commercial experience, preferably with some knowledge of programming techniques - RPGII, and the personality for working closely with user departments. Experience of the publishing trade would be particularly useful.

If you have or are looking for experience in mini computers and want a stimulating environment with real prospects for future advancement and feel that you can handle the new challenge - call now!

Ref: EK 2102 (Consultants)

AB EXECUTIVE (KINGSTON) LTD. 01-546 9473

**SALES
EXECUTIVE**
c £10,000 + car ++

COMPUTER INSTRUMENTATION LTD (CIL) is a fast expanding Computer systems and peripherals manufacturer. We need an experienced salesman to handle our Northern UK area for plotting and draughting systems. You should have at least 2 years' sales experience and ideally some experience with selling computer and graphics products. This is a senior appointment for a self-motivated salesman, with high prospects for the future. Ideally you should live in the Manchester to Leeds area.

Write or phone for an application form to A. Luffman, Computer Instrumentation Ltd., Chandler's Ford, Eactleigh, Hants. Tel: (04215) 66321.

FIELD SERVICE ENGINEERS
NEW OPPORTUNITIES
£6,000 + Overtime + Standby + Car + Training

New opportunities have arisen in LONDON, MIDLANDS, SCOTLAND and the SOUTH WEST as a result of expansion by a highly successful British systems company with over 2000 installations in 16 years of business. This young and dynamic company offers you the chance to develop your career in mini computers at the very top end of the market.

If you have or are looking for experience in mini computers and want a stimulating environment with real prospects for future advancement and feel that you can handle the new challenge - call now!

Ref: EK 2102 (Consultants)

AB EXECUTIVE (KINGSTON) LTD. 01-546 9473

Communicate with Racal

Pleasantly situated adjacent to the Cotswold Hills in Tewkesbury Racal-Redac Limited develop software to produce complete interactive graphic based Computer Aided Design Systems using the DEC PDP11 Computer.

Our systems are sold worldwide and are utilised in the design of Printed Circuit Boards and Integrated Circuits.

We are now extending our expertise and developing advanced software for use in the design of the new breed of sophisticated LS1 chips and microprocessors. We are also currently involved in producing a Computer Aided Mechanical Design System based on the DEC PDP11. This will entail considerable expansion in our Software Departments and consequently we have a number of opportunities for programmers at all levels.

Development Programmers

Applicants should hold a Science based degree or HNC qualification and have a working knowledge of Fortran or Assembly. Previous experience in a software environment is desirable although specific vacancies exist for newly qualified personnel. The programmes appointed will work in small teams on Development projects using a range of in-house computers.

Customer Service Programmers

In constant liaison with our customers the Customer Service group provides a fast and efficient service using software to solve customers' day to day problems. The work is interesting and varied and sometimes entails visiting the customer's location both in the UK and Europe.

Customer Project Programmers

Customer Project Programmers work on short term projects from the initial analysis stages through to coding and testing to new items of hardware or adding new facilities to our already proven software.

Applicants will hold a relevant degree or HNC qualification and must have had at least 12 months experience in a software environment.

Promotion prospects are excellent as it is anticipated that continuing expansion will create additional Senior level positions in the future.

In addition to excellent starting salaries, Racal employment benefits include a Company Pension and Free Life Assurance Scheme and over 4 weeks annual holiday. Relocation assistance will be provided in appropriate cases.

Please write enclosing details of age, experience and present salary to:

B. Aschford, Personnel Officer, Racal-Redac Limited, Newtowm, Tewkesbury, Gloucester, GL20 8HE
or Telephone Tewkesbury 294161 for more information.

RACAL**COBOL**SOFTWARE HOUSE
LONDON £6-8.5K**SYSTEMS
PROGRAMMERS**SOUTH EAST & EC
£6-8K - £9-15K**MATRIX**360 Oxford Street
London WIN9HA
01 491 4636**COMPUTER PERSONNEL
Maths Services**

The Warton Division of British Aerospace is making major contributions to Europe's largest and most advanced aircraft programme, the tri-national Tornado multi-role combat aircraft, and to other important projects.

The following personnel are required to join a team working towards installing, in mid '79, an IBM 3032 under MVS/JES2/TSO alongside an ITEL AS5 and DEC PDP and VAX computers.

Computer Operations Manager

To manage the day-to-day running of the installation with particular emphasis on management of the 30 computer operators working a 3-shift system.

Applicants must be over 30 and have 5 years' experience in computer operations including management experience.

Systems Programmers

Staff with 2 years' relevant experience are required to join teams:

- (i) generating, modifying and tuning an MVS/SE system with JES2/NJE and TSO/TCAM.
- (ii) implementing and supporting systems on DEC PDP II's and VAX II/780's.

Computer Education Officer

To join a team providing programmer training using modern techniques including IBM's Interactive Instructional System.

Applicants must have 1-2 years' programming experience in FORTRAN on IBM systems.

Suitably qualified personnel (male/female) are invited to apply giving full details of their background and experience, quoting reference No. CW/1797.

There is a choice of rented housing at attractive prices in pleasant residential areas within comfortable commuting distance from Warton.

Mrs. E. A. Hell,
Senior Personnel Officer,
British Aerospace Aircraft Group,
Warton Division,
Warton Aerodrome,
Preston, Lancs. PR4 1AX.

BRITISH AEROSPACE
AIRCRAFT GROUP
Warton Division

FAREHAM BOROUGH COUNCIL

Borough Treasurer's Department

The Council's present computer installation a Honeywell 125 Disk and Magnetic Tapes is to be replaced in mid 1978 with Honeywell 1800 81270 and 18100 tapes. In conjunction therewith the Council propose to expand their present team of Systems Analysts and programmers.

**SYSTEMS AND
PROGRAMMING
MANAGER**

Post 190/2 Grade PO 1 (3-7) £8060-£8702 per annum inclusive

This is a new post. The person appointed will supervise a systems Analysis and Programming team and be responsible for the specification, design and development of both on-line and batch systems. The ability to liaise with users at all levels is essential.

Applicants should also have at least 5 years' experience at senior management level in developing computer applications.

**COMPUTER
PROGRAMMER**

Post 192 Grade AP 3/4 £6722-£6932

Work includes development of new applications of both on-line and batch systems, and maintenance of existing programs. Applicants must have at least 2 years' relevant experience and be competent in the use of a terminal. Age commencing salary will be determined having regard to experience.

100% removal expenses Up to £600 payable towards legal and estate agents fees plus generous disturbance and separation allowances. Flexible working hours. Temporary housing accommodation may also be available.

For application forms and further details write to the Personnel and Management Services Officer, Box No. 18, Fareham Borough Council, 100 High Street, Fareham, Hampshire, PO13 9JZ, Tel: Fareham 236100, ext 2224. Closing date for receipt of applications 22nd January, 1979.

Fareham
Borough Council

INDALEX
Analyst/
Programmer

C £5,500 — Cheltenham

We have an ICL 2903 and ED8 30's.

We seek an experienced Analyst/Programmer (male/female) who can quickly contribute to the current projects such as, on line order entry, shop floor data collection (using 7802 commun kit) and implementation of a new payroll package.

Suitable applicants, should preferably have experience of Cobol and On Line Working. This Senior Staff position carries an attractive remuneration package. Please write with brief details to Mr. G. M. Chatfield, Personnel Manager.

Indalex Limited-Kingsditch Lane-Cheltenham
Telephone 21641

UNIVERSITY OF LEICESTER
COMPUTER
PROGRAMMER

Applications are invited from suitably qualified and experienced candidates for a newly established post of Computer Programmer in the central administration.

The successful candidate will be involved in the technical development of an integrated computerised record and management information system ultimately embracing all principal areas of the University's administrative functions. To support this, the University has recently installed an IBM 3730 computer (POD 11/24 system).

Applicants should have about two years' programming experience and be able to demonstrate a background of some integrated data processing with experience of interactive computing. Knowledge of Basic PASCAL will be an advantage.

Applications should be submitted according to the following scale of fees:

£3533 £3588 per annum.

Information leaflets and further particulars may be obtained from the Registrar, The University, Leicester LE1 7RH, to whom completed applications should be returned as soon as possible, and not later than 29th January 1979.

**THE MATFIELD
POLYTECHNIC
Computer Centre
COMPUTER
OPERATOR
and
SENIOR COMPUTER
OPERATOR**

We are presently installing three new multi-access computer systems to support over 200 simultaneous terminals and have two vacant posts available on a permanent basis, with the option of a 3-shift system.

Although preference will be given to candidates with experience of DEC equipment for the senior post, the essential requirement for both posts is a good background in computer operation.

The computers in DEC 10/91, DEC 20/20 and PDP 11/37 will be housed in a new building which has excellent staff facilities.

Salaries

Senior Operator
£4433-£4888 (AP 3/4)
(Operational £4433-
£4888 (AP 3/4))

inclusive of shift and other allowances. Trainees may be appointed at lower salary.

For further details and an informal discussion ring Gordon Broad on (0170) 821111, Ext 200, or the Matfield Office, The Matfield Polytechnic, P.O. Box 100, Matfield, Herts SG9 9PL.

Closing date for applications January 1979.

Both posts are open equally to male and female applicants.

LEEDS**SYSTEMS ANALYSTS**

to £5500 + bonus

PROGRAMMERS

to £4300 + bonus

Our client has a number of interesting vacancies for systems analysts and programmers.

The company is highly profitable and part of a major British industrial group and uses the latest ICL equipment.

The data centre in Leeds is the headquarters of the European arm of the Company and some infrequent travel could be involved.

The work is interesting and the installation is already well established and much of the work already processed is on-line. It follows that future developments will follow this pattern.

Excellent prospects, working conditions and promotion potential. Salary around £4300 for programmers and to £5500 for analysts PLUS BONUS.

Contact Ivor Norton, in confidence, quoting reference CW/79002.

Ivor Norton Management Services Ltd

Recruitment Consulting Division

Systems Analysts & Programmers

West Country

Our Computer and Administration Centre provides the Debenham Group with a comprehensive range of management and financial services. Within the Centre the Systems Development Department develops and maintains a wide range of systems to support our business activities. Two ICL 1900 mainframe computers are in use together with a pair of CMC Realtime mini-systems.

One to expand in the Department will have vacant posts.

Systems Analysts c £5,000 Programmers c £4,000

Systems and Programmers will work in Project Teams. Applicants male and female, should have a minimum of three years practical experience in systems analysis or programming (COBOL or BASIC). Candidates with specifically practical experience could be offered higher starting salaries.

Please write or telephone for an application form, together with a copy of the job description and details of the excellent Company benefits. Ian Simcock Personnel Manager, Debenhams Limited, Bedford House, Park Street, Taunton TA1 1DE.

Debenhams

Numerate Engineers Analysts Programmers

The System Problem Analysis Group of Ferranti Computer Systems Limited is an expanding organisation that undertakes analytical and scientific programming tasks for external agencies (in the UK and Europe) and in support of Ferranti's Real-Time System Projects:

Our Work Includes:

- Signal Processing
- Target Tracking
- Fire Control Systems
- Computer Simulation
- Scientific Data Processing and Mathematical Analysis
- Continuous and Sampled
- Design and Implementation
- Microprocessor Systems
- Sonar and Radar
- Active and Passive
- Gun and Missile
- Event and Time Based
- Design and Implementation

We require new and experienced graduates in a numerate discipline to take part in our future expansion. Successful applicants will be capable of:

- making significant contributions in new fields
- communicating effectively
- liaison with customers

We can offer:

- high job interest
- flexible working hours
- competitive salaries
- paid overtime and bonus scheme
- early opportunities for responsibility
- friendly, informal atmosphere

If you feel you can meet the challenge that our kind of work offers, then please ring our Recruitment Officer on Bracknell 3232, ext. 471, or write quoting ref. no. D/884/CW to:-

The Personnel Officer, Ferranti Computer Systems Limited, Western Road, Bracknell, Berkshire.

IBM PROGRAMMING—CAREER DEVELOPMENT WITH ICI

ICI Fibres wishes to supplement its programming strength by the addition of two young persons who already have 2/3 years' programming experience using IBM 360/370.

Applicants, of either sex, aged between 22/32, will be required to demonstrate a good working knowledge of PL/I and/or Assembler using Michael Jackson structuring techniques and preference will be given to candidates with experience of data base/on line processing.

Experience with CICS/Admbs would be an added advantage, although not essential.

The Division's commercial and administrative functions are heavily dependent on computerised systems and the successful applicant will be expected to work to tight schedules in a variety of projects — both maintenance and development.

The Division has an IBM 370/158 located at its HQ in Harrogate. Remuneration will be around £5,000 p.a. and other benefits include productivity bonus, profit sharing scheme and contribution towards re-location expenses to the Harrogate Area.

Please write, giving brief details of experience to: Miss A. B. W. Lyne, Personnel Department, ICI Fibres, Hookstone Road, Harrogate, or phone (0423) 68021, extension 477.

SWITCH TO MICHELIN TAKE A GREAT TREAD FORWARD

COMPUTER PROGRAMMERS

MANAGEMENT SERVICES DEPT.

LONDON, SW3

Michelin, the world's leading radial tyre manufacturer, wish to recruit two programmers to design programme implementation and maintenance systems.

The post involves working initially with the mainframe installation at our St Albans Training D.I.D. and Commercial Offices throughout the U.K. An appointment to the analysis field is a possibility.

Successful applicants must have minimum of one year's experience in COBOL. An upper limit of 21-30 years of age with a maximum of 2-3 years experience on Honeywell IBM 183 Computer equipment, in an industrial/Commercial environment.

Michelin offers individually negotiated salaries to reflect the calibre of programmes required, five weeks paid holiday plus statutory holidays, free insurance and mandatory pension scheme.

After all, we offer a career associated with first-class programmes designed for those equally equipped with effective Personnel Policies. Please write in confidence, giving brief details of age, experience, qualifications and current salary, to:-

The Personnel Manager — Commerce, (Ref. JFO/CP/78), MICHELIN TYRE CO. LTD., 81 Fulham Road, London SW3 8RH, or telephone 01-589 1460 for an application form.

FERRANTI
Setting technology

Computer Scientists earn their Stripes with Esso

Due to the increasing number and complexity of projects both in hand and imminent, our Research Centre at Abingdon — which specialises in fuels, lubricants, and additives — needs a technically-minded and creative man or woman to join a small team providing an efficient, and flexible computing service for our scientists and technicians.

Using the Centre's multi-terminal interactive PDP II System linked to the worldwide Exxon IBM 370 network, this team is responsible for all aspects of computer application and development arising from projects under investigation, including the use of mini-computers in data logging and real-time applications.

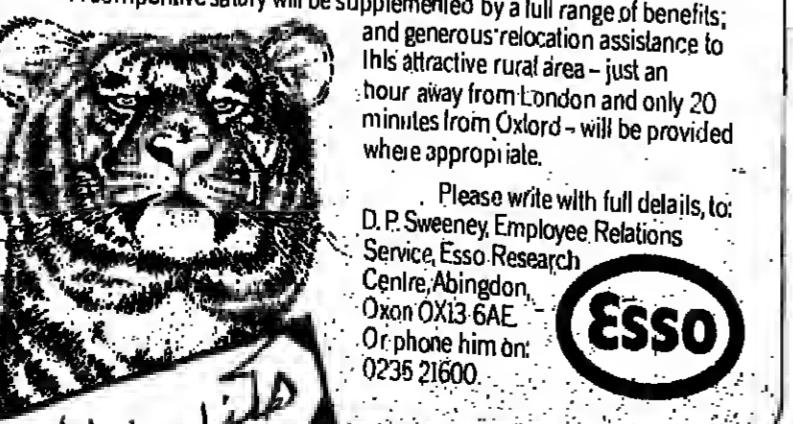
With a degree in Maths, Statistics, Chemistry, Electronics, Chemical Engineering or an associated discipline, you must be able to appreciate the scientific problems encountered in our research — logically thinking them through to provide cost-effective computer solutions.

At least one or two years' practical experience with systems or software is essential — preferably in a scientific environment. A statistical background would also be an advantage.

A competitive salary will be supplemented by a full range of benefits, and generous relocation assistance to this attractive rural area — just an hour away from London and only 20 minutes from Oxford — will be provided where appropriate.

Please write with full details to: D.P. Sweeney, Employee Relations Service, Esso Research Centre, Abingdon, Oxon OX13 6AE. Or phone him on: 0236 21600.

Further particulars and application forms are obtainable from Personnel, University of London Institute of Education, Bedford Way, London WC1H 7JL. Closing date: 17th January 1979.



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£8,000 + Bonus + Car

Datascene Recruitment Limited is one of the leading computer recruitment specialists handling positions in the computer industry at all levels up to senior management appointments.

We are currently looking for someone to take over existing clients and to set up new business in offering our recruitment package.

This will involve advertising clients on advertising, press, television, teletext and network, and then co-ordinating the response, interviewing applicants and presenting a curriculum vitae of each person. These forwarded to the client for discussion on who applicants they might interview.

We require someone who has a background of either systems analysis or programming, a strong personality and a flair for being successful.

Company benefits include a good basic salary, bonus and a company car after an initial period. If you are interested and require further details contact Mike Daynay, No. 439 1856

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In fact we need 84 more Georges (or Georgines). Whether you're Gobel shaped or Assembler or Basic shaped — we need you. We also have opportunities waiting for Analysts, Analysts/Programmers in scientific or commercial environments. In short, opportunities in all D.P. areas.

We found George a job with a good future. He came to us because he knew we were one of the foremost Consultants in the West Country and would know about opportunities he would never hear of. You too could have a future like George in the West Country — phone us and start the New Year right.

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Telephone Bristol (0272) 426831



UNIVERSITY OF LONDON INSTITUTE OF EDUCATION

PROGRAMMER A

Applications are invited for the above post in the Department of Speech and Computer.

The successful applicant will be required to maintain and develop programs

for the ICL 2903/20 system

linked to the ICL 2903/20 system

and Regional Computer Centres

using COBOL and FORTRAN

and assembly language.

Experience of some aspects of a successful computer installation.

Salary negotiable in the region of £5,500 per annum according to experience.

Applications in writing to Personnel Manager, Royal

Open & Halls, Covent Garden, London WC2E 9HE

Date 18th January, 1979.

UNIVERSITY COLLEGE OF SWANSEA

APPLICATIONS PROGRAMMER

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Applications in writing to Personnel Manager, Royal

Open & Halls, Covent Garden, London WC2E 9HE

Date 18th January, 1979.

ROYAL OPERA HOUSE COMPUTER OPERATIONS MANAGER

We are expanding our computer department to allow the existing Data Processing Development Manager to concentrate on systems work and programming. We wish to appoint an Operations Manager to be responsible for supervising and scheduling the work of the ICL 2903/20 computer system and the NCR machines which are being phased out.

RPG 2, ICL 2903/20 job control language and some knowledge of payroll procedures would possibly be an advantage, but it is essential that candidates have experience of some aspects of a successful computer installation.

Salary negotiable in the region of £5,500 per annum according to experience.

Applications in writing to Personnel Manager, Royal

Open & Halls, Covent Garden, London WC2E 9HE

Date 18th January, 1979.

STOP PRESS! ALL COMPUTER STAFF!

FORTRAN Programmers urgently required for the Royal Opera House, Covent Garden, London WC2E 9HE.

Applications accepted from experienced FORTRAN

programmers with a minimum of 2 years experience.

Salaries £1,500-£2,000 per annum.

For full details apply to: Mr. R. J. Mooney, Royal

Open & Halls, Covent Garden, London WC2E 9HE

Date 18th January, 1979.

CAPITAL ARTS ALL AREAS

Programmers urgently required for the Royal Opera House, Covent Garden, London WC2E 9HE.

Applications accepted from experienced FORTRAN

programmers with a minimum of 2 years experience.

Salaries £1,500-£2,000 per annum.

For full details apply to: Mr. R. J. Mooney, Royal

Open & Halls, Covent Garden, London WC2E 9HE

Date 18th January, 1979.

637 3551 day 636 9659 eve

637 3551 day 636

MODCOMP has now established mini manufacturing and software development capabilities in the UK. As part of our continuing growth, we need the following people:

European Hardware Support to £8,000 p.a.

Sales Engineer to £8,000 p.a. basic

Sales Support to £8,000 p.a. basic

Company benefits are excellent and include free BUPA and non-contributory pension. Relocation is possible.

MODCOMP

SALES ENGINEER COMPUTER SERVICES

Applicants are invited to fill this new position created as a result of our further expansion. We are looking for someone who has already gained experience in selling in the Computer Services Sector and wishes to join a successful international group whose activities are totally related to selling third party computer hardware maintenance to manufacturers O.E.M's and End Users.

The successful applicant will join a small but dedicated team operating from our Head Office in Feltham, Middlesex and must be willing to travel throughout the U.K. and occasionally overseas.

An attractive salary will be negotiated and a contributory Pension Fund is in operation. A Company car will be supplied for your full time use.

Please write giving full details of your career to date marking your application Private and Confidential to:

The European Marketing Manager, Systems Maintenance and Services Limited, P.O. Box 13, Unitair Centre, Great South West Road, FELTHAM, Middlesex, TW14 8NT.

UNIVERSITY OF HONG KONG CHAIR OF COMPUTER SCIENCE Applications are invited from suitably qualified candidates for the Chair of Computer Science which is expected to be established from 1st October 1979. Awarded salary is dependent on qualifications and experience, up to £10,492 p.a. Further information and applications may be obtained from the University of Hong Kong, General Assessor, 10 Conduit Road, Queen's Building, London WC1R 4BS or the Assistant Secretary, University of Hong Kong, Conduit Road, Queen's Building, London WC1R 4BS. Applications should be sent by 15th January 1979. Please quote Ref. No. 20/B/79.

UNIVERSITY OF WARWICK DATA PROCESSING OFFICER Applications are invited for the post of Data Processing Officer in the University Central Administration. Salary, normally as soon as possible, Salary will range from £3,000 to £3,171.75, 764 per annum. FOR several years, the publication "Choosing a computer" has been a valuable desk-side companion to the DPM. Among many other admirable qualities, it includes a comprehensive list of equipment manufacturers covering such basic information as price, power and performance.

To advertise in this important feature contact:

Owen Kelly on 061-872 4211 or John Farrar on 01-261 8098

COBOL PROGRAMMERS

Gresham Life require an additional programmer to work on their new life assurance system based on a Hewlett Packard 3000 Series 2 computer. The system operates in on-line and batch modes utilising date base technique.

Applicants, male or female, should have a minimum of one year COBOL programming experience in a commercial environment. Experience of data base applications and interactive

program development would be an advantage. A salary of £4,000-£4,750 depending on experience is offered together with other valuable fringe benefits, including relocation expenses (if appropriate), non-contributory pension, life and sickness assurance, flexible working hours and luncheon vouchers. Prospects are excellent and include the opportunity to be involved in a new system as it develops. Write or phone:-

Gill Pulling, Personnel Department, Gresham Life Assurance Society Limited, P.O. Box 1, 2-6 Prince of Wales Road, Bournemouth BH4 9HD. Tel: 0202 767655.

PLAN YOUR 1979 CAREER WITH PRESCOT ENGLAND, AUSTRALIA SOUTH AFRICA and NEW ZEALAND £4,000 to £12,000

Careful planning often makes the difference between the successful and the not so successful computer career. Prescot Computers understand this because we specialize in overseas computer recruitment and the selection for an overseas post requires extra care by Prescot, employer and employee. We use the same principles of care whether UK or overseas employment is involved.

We currently wish to interview Programmers, Systems Analysts, Analyst Programmers, Consultants and Sales People for a broad range of clients in England, Australia, New Zealand and South Africa. Salaries range from £4,000 to £12,000 p.a. If you are interested, why not telephone Chad Stippler on 01-242 2142 for an informal discussion.

Alternatively if you prefer write to him at:

Prescot Computers Limited
8 Bloomsbury Square
London WC1A 2LP
Telex 231110

Among those missing were: APL, CAFS, HDLC,

SESA DEUTSCHLAND GMBH

REALTIME PROGRAMMERS

REALTIME DATA PROCESSING in WEST GERMANY

SESA is one of the top-ranking international firms specializing in the ANALYSIS, DESIGN and DEVELOPMENT of computer-based real-time systems.

In the course of realizing more than 400 such projects SESA has also developed expertise in the management of large-scale complex turnkey-systems.

We are seeking REALTIME-programmers in the following fields:

- NETWORK AND COMMUNICATIONS
- TRANSACTION- PROCESSING
- PROCESS-CONTROL

Applicants should have 3-5 years experience in the design and development of real-time-software. Experience in the following fields is essential:

- OPERATING SYSTEMS
- HIGH LEVEL LANGUAGES
- ASSEMBLER LANGUAGES

Knowledge of either PL1, ALGOL 68, BCPL or CORAL and at least one real-time-operating-system would be of advantage.

An excellent salary and fringe benefits will be part of the contract offered to the successful applicant.

Further conditions will be discussed during interviews which will be held in London in January 1979.

Please apply referring to this advert with full curriculum vitae to:

SESA-Deutschland GmbH
Lacobistr 7
D-4000 Düsseldorf 1
Mrs B. Lehmann

Ascii through the Logic Gate

An epic in 32K words, by Richard Forsyth

Block 26 (Chock-a-Block)

We leave *One in her fate*, and rejoin Hex who is a prisoner of Fort Ronson. He has been led up from the dungeons for a meeting with the omniscient DPM.

Hex waited apprehensively in the starkly furnished office for the DPM to appear.

A disembodied voice filled the room. "Do you know why you are here?"

Recognition was instantaneous. There could be no mistake. It was the voice of his father, Abraham Synapse, alias Dr Null.

"You sound like my father," said Hex. "but you're not Dr Null."

"Right on both counts," came the reply.

Hex looked around for the source of the sound. "Who are you? Why won't you show your face?" he asked.

The Data Processing Manager lies low. I am the System Incarnate, representative of UNDS itself. I am purely procedural, untrammeled by the grossness of a corporeal embodiment. That is why I did not contradict you when you took me for your father (though certainly I am not Dr Null). You are all my children."

"Why have you stolen my real father's voice?"

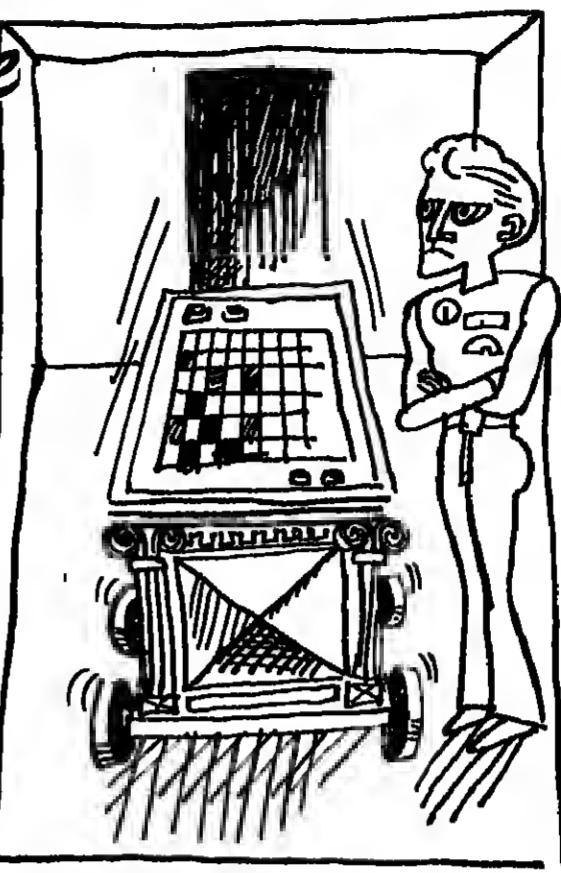
"May I ask to whom you refer?"

"Abraham Synapse, creator of you and your ilk," replied Hex.

you, as System overlord, resort to his voice to cover your uselessness? Surely that substantiates his claim?"

"I am afraid not. This voice is just one among many. I wear it like a garment, partly for your sake, partly out of nostalgia. It was Gigidski, to give him his due, who designed the first practicable spoken output generator. When he fled Russia he pinched many of Synapse's ideas. In those days North America and Eurasia were deadly enemies, and he was welcomed with open arms. Consequently the North American Network, of which I am the logical outgrowth, was equipped with Gigidski's phonemic synthesizers. But I am no longer restricted to my native accent." The last sentence was spoken in Hex's own voice. His unvoiced him more than anything the DPM had said.

Hex had been expecting an attempt to discredit his father's memory, but not a slur as subtle as this; however, he was not going to give up his convictions. "Why then do



Synapse. On the one hand he inspired to emulate the professor, even taking his name; on the other he sought to dignify his findings, and ultimately to destroy his work.

"Then who was my father?"

"Your biological father, for what it is worth, was a psychiatrist called Sigmund Zilch. He emigrated from Budapest to America shortly before your birth. You were born Samuel Zilch — no connection with Gigidski or Synapse. You owe allegiance to no one but me."

"Sam Zilch," murmured Hex. "that's the name I gave when challenged. I thought I made it up on the spot."

"A residual memory trace, no doubt, left over after cybernation."

"At least I'm still Sam," thought Hex. It was consoling to have one constant factor running like a thread through the labyrinth of his identity.

"Now it is time you answered my original question: do you know why you are here?"

"Because I was tricked by your clockwork emperor. That impure amateur psychologist, Extracode."

"That may be true, but it is not an answer."

"I don't know. You tell me."

"To play a game of chess, or rather two games."

"Chess?"

There was a whirring of well-oiled gears, and a panel at the back of the office slid open. An ornate carved table or wheels emerged from the recess, humming as it moved.

The DPM introduced it. "This is Checkmate (Chess Heuristic Evaluation Computer, Knowing Midgame And The Endgame). He has challenged you to a match. Scoring will be one point for a win, half for a draw. You will play twice, once with white and once with black. To win at least 1½ points; if the scores end level, the machine is the winner. If you succeed, the reward is a job on the Future System project; if you fail, you will go back to jail to await execution."

"What makes you so sure I want to work for you?"

"Let us discuss that after the game, shall we?"

The trolley drew up by Hex. On its top was a glass checkerboard pattern. Images of the pieces in their initial configuration were projected from underneath.

"As a concession, you may choose whether to have white or black first," announced the DPM.

"I'll have white," stated Hex boldly. "and I shall need a second. If we're to do this properly, we must also agree on an impartial referee. I nominate McNull as my second and Simula as referee."

"You are in no position to lay down terms."

"Then I won't play." Hex was grumbling. If the DPM took so much trouble to arrange a game, there had to be an ulterior motive.

"Very well, the game is forfeit."

The main door opened. Hex's robot escorts re-entered. "Take him back to the cells," ordered the DPM.

"Cheat!" shouted Hex as they dragged him away.

Has Hex been booked? Find out next week.

By Richard Forsyth

BOOK REVIEWS

An aid to reading technical literature

Oscar's Acronyms: A dictionary of abbreviations and acronyms used in scientific and technical writing, by Emanuel Benjamin Oren, 262pp, £8.75. Routledge and Kegan Paul.

UNDERSTANDING abbreviations and acronyms is always a problem in reading technical literature, particularly in computing, and therefore a good dictionary of these would be extremely useful. A librarian at the Civil Aviation Authority, Emanuel Oscar, has compiled this volume by scanning journals in the Science Reference Library and his own library over the last two to five years, classifying the abbreviations under a range of headings such as Aeronautics, Behavioural Sciences, Geosciences, and so forth.

If in cursory examination finds as many mistakes as this, one can only assume that in actual use a great many difficulties would arise. Clearly the author's approach is unsound. He should at least have had people knowledgeable in each subject field check through the material, just to spot the glaring errors and omissions. Use of thesaurus-generation software, well-established techniques for storing and retrieving and modifying data.

I did learn one interesting fact: in Dairy Sciences, BWP stands for Brown Wrapping Paper.

RORY JOHNSTON
15 years' knowledge
Database organisation for data management, by Saki Ghosh, £23.10. Academic Press Inc. (London) Ltd, 24-28 Oval Road, London NW1 7DX

THIS book contains most of the knowledge gained by the author during his 15 years with the research division of IBM. It uses basic mathematical concepts to describe data and characterises the hardware for storing data and developing techniques for storing, retrieving and modifying data.

It is a useful mathematical treatment of the methods of storing and accessing data on large computers.

GEORGE BAKER

Falls far short of expectations

Choosing A Computer 1978/79, by Clare Smyth and Paul Broedhaas, 272pp. £8 (free to subscribers to "Data Systems"). Embankment Press.

FOR several years, this publication "Choosing a computer" has been a valuable desk-side companion to the DPM. Among many other admirable qualities, it includes a comprehensive list of equipment manufacturers covering such basic information as price, power and performance.

Unfortunately, this practical formula has been abandoned, and the latest edition falls far short of expectations. Content is selective, often inaccurate and frequently irrelevant. The new book incorporates a Conference and Exhibition Year Planner, covering the period April 78 to April 79. As can be expected in a volume already somewhat dated on publication, conference activity listing is somewhat sketchy beyond November 1978.

The chief criticism of the book — one which it must be admitted applies to many such publications — is the lack of a clearly defined target area. Despite the title, the book is clearly not designed for the first-time user, becoming involved as it does in the complexities of European PTTs, and Frequency and Time Division Multiplexing. The choices as seen by the editors are limited to mainframe or visible record computing, with the alternative being a bureau.

Apart from the omission of the mid and micro, content seems erratic. While three paragraphs are granted to leasing, over two pages are devoted to secondhand equipment.

Similarly, staffing the computer is relegated to one small two-paragraph section.

The book is keen on recommending computer-readable input, but less critical on correcting its own reader's input.

Perhaps for the next edition (to be published in January 1979), the publishers will revert to the old method of production.

I feel that at £7.50 (paperback), the book is somewhat over-priced, but nevertheless, it is an excellent introduction to the subject of choosing a computer. Alas, this is not one of them. Some of its contemporaries

